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Response to Comments Background Document for the Third Third Land
Disposal Restrictions Proposed Rule November 22, 1989 (54 FR 48372)
Volume 2-2. Capacity Related Comments

ICF, Inc., Fairfax, VA

Prepared for:

Environmental Protection Agency, Washington, DC

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**RESPONSE TO COMMENTS BACKGROUND
DOCUMENT FOR THE THIRD THIRD
LAND DISPOSAL RESTRICTIONS
PROPOSED RULE
NOVEMBER 22, 1989 (54 FR 48372)**

**Volume 2-2
Capacity Related Comments**

May 8, 1990

Prepared for:

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NOVEMBER 22, 1989 (54 FR 48372)
VOLUME 2
CAPACITY RELATED COMMENTS
MAY 8, 1990

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CHAPTER 8

MERCURY WASTES

EPA received eighteen comment letters addressing mercury waste capacity issues. All of these comments related to the mercury retorting BDAT established for high concentration mercury wastes. Thirteen commenters expressed their support for EPA's proposed two-year national capacity variance, with several adding that two years was unlikely to be sufficient time to develop treatment and disposal capacity for high concentration mercury wastes. Four commenters argued that mercury retorting was virtually nonexistent, and therefore an inappropriate BDAT. Three commenters requested that the proposed variance be extended to include both the high and low concentrations of K071, due to the questionable retortability of the waste and development of acid leaching, which was the BDAT promulgated for the waste in the First Third rule. Two other commenters disagreed with the capacity variance for certain mercury subcategories, citing available treatment capacity for these wastes. Commenters addressed four major categories:

- Agreement with the capacity variance for retortable mercury wastes;
- Available mercury retorting capacity is little to none and should not be BDAT;
- The variance should be extended to both the high and low subcategories of K071; and
- Certain high concentration mercury wastes do not require a variance.

8.1 Agreement With The National Capacity Variance For Retortable Mercury Wastes

Summary:

Thirteen commenters (American Chemical Society (029); Rayovac Corporation (069); Sandia National Laboratories (118); Vulcan Materials Company (128); Olin Chemicals (129); The Chlorine Institute (132); PPG Industries (133); General Motors Corporation (143); LCP Chemicals/The Hanlin Group, Inc. (186); BF Goodrich Company (251); AZKO Chemicals, Inc. (258); Pioneer Chlor Alkali Company, Inc. (265); and Mc Dermitt Mine (L018)) agreed with EPA that adequate retorting capacity for mercury wastes was unavailable and therefore a capacity variance for retortable mercury wastes is warranted. Sandia National Laboratories further supported the capacity variance due to a limited market for reclaimed mercury. Many of these commenters also indicated that although the two-year capacity variance is necessary, the two-year time period is unlikely to be enough time to develop treatment capacity for high concentration mercury wastes.

Response:

EPA acknowledges these comments and has determined that a capacity variance is needed for wastes with a BDAT of mercury retorting. EPA has determined that insufficient mercury retorting capacity is available to handle the volume of these wastes, and is therefore promulgating the national capacity variance, restricting land disposal on May 8, 1992. EPA recognizes the difficulty in developing adequate capacity during the two years of the variance, however, RCRA section 3004(h)(2) limits national capacity variances to a maximum of two years, prohibiting EPA from extending the expiration date. Should any of these commenters be unable to locate treatment capacity following expiration of the national capacity variance, they may want to pursue a case-by-case extension.

Comments:

The comments relevant to this issue are presented in the following order:

- American Chemical Society (029);
- Rayovac Corporation (069);
- Sandia National Laboratories (118);
- Vulcan Materials Company (128);
- Olin Chemicals (129);
- The Chlorine Institute (132);
- PPG Industries, Inc. (133);
- General Motors Corporation (143);
- LCP Chemicals/The Hanlin Group, Inc. (186);
- BF Goodrich Company (251);
- AZKO Chemicals, Inc. (258);
- Pioneer Chlor Alkali Company, Inc. (265); and
- Mc Dermitt Mine (L018).

Docket Number: LD12-00029

Commenter: American Chemical Society

Comment:

While treatment is available for numerous hazardous wastes, the Society is concerned about the disposal of volatile metals. There are no simple, reasonable techniques for the recovery or recycling of many of the various compounds of volatile metals. The majority of laboratory reagents and other wastes are suitable for incineration, but volatile substances such as mercury, selenium, osmium, and beryllium and their compounds cannot be incinerated. A combination of regulatory requirements under the Clean Air Act and the concerns of incinerator operators make it inadvisable to incinerate these substances. Scrubbers are designed to collect particulates, not to collect vapors emitted from the incineration of volatile metals and their compounds. For these reasons, commercial incinerators do not accept these materials for disposal. Other than secure landfilling, there currently are no other technologies available for the safe disposal of these materials. The Society encourages EPA to pursue vigorously a research program on characterization and disposal methods for volatile metals and strongly supports a two-year national capacity variance to allow for the development of additional disposal methods for volatile metals and their related compounds.

Docket Number: LD12-00069

Commenter: Rayovac Corporation

Comment:

In Table 1, 54 FR 48376, the EPA proposes to grant a two year national capacity variance for mercury retorting (Waste Code D009) and also for the thermal recovery of cadmium from cadmium containing batteries (Waste Code D006).

National Capacity Variances

We agree that sufficient national capacity presently does not exist for either of the wastes, and that a two year variance is required to establish sufficient national capacity for each of the wastes. Rayovac strongly supports the proposed two year variances.

Docket Number: LD12-00118

Commenter: Sandia National Laboratories

Comment:

We agree with EPA's proposed capacity variance for mercury retorting in Table III.B.1.(d) (Pg 48475) because we have also experienced a shortage of vendors in this area. Secondly, the existing vendors also express that the market for the reclaimed mercury has been limited. We hope the proposed rule and the two-year variance will change the existing situation.

Docket Number: LD12-00128

Commenter: Vulcan Materials Company

Comment:

The Agency has proposed to grant a 2-year national capacity variance for the surface disposal of mercury residues from the mercury retorting process. As noted in the preamble, EPA has estimated a current capacity for mercury retorting of less than 1 million gallons/year against a required capacity of 8.8 million gallons/year. Vulcan concurs with the Agency's assessment that a two-year national capacity variance is warranted and necessary.

Docket Number: LD12-00129

Commenter: Olin Chemicals

Comment:

Olin concurs with USEPA that a 3 year variance for contaminated soil and debris for which the BDAT is based on combustion, wet air oxidation, vitrification and mercury retorting is absolutely necessary. There is currently a limited available capacity in the U.S. for these technologies. In the case of mercury retorting, there is no commercial capacity available.

The compliance dates for the proposed standards are May 8, 1992 for D009 non-wastewater, based upon a two-year national capacity variance. Olin supports the proposed compliance dates for the D009 BDAT standards.

Olin supports the two-year national variance for mercury retorting of non-wastewaters which would be effective from May 8, 1990 to May 8, 1992 due to the time required to develop successfully operating retort facilities.

However, Olin also believes that the two-year national variance will not provide adequate time for the proper development of retorting facilities to effectively treat K106, K071, and D009 non-wastewaters, and this will promote individual requests for variances and extensions for additional time.

If the 0.030 mg/l mercury standard for wastewaters is promulgated, a two year national capacity variance is appropriate. Facilities with complex, non-ionic mercury in their wastewater would have to develop technology to treat these streams to 0.030 mg/l mercury.

Docket Number: LD12-00132

Commenter: The Chlorine Institute, Inc.

Comment:

The proposed two-year national variance for mercury containing nonwastewaters should be adopted. This variance, however, may provide insufficient time to develop and install a commercially viable retorting unit. Therefore, the agency should anticipate individual company variance petitions at the end of the two year period.

Due to the problems associated with retorting and the present lack of commercially available mercury retorting processes, considerable time will be required to develop successful operating retorting facilities. If EPA proceeds with retorting as BDAT, more than the two year National Capacity Variance may be needed to develop and install the equipment.

The Chlorine Institute supports the two-year national variance for mercury retorting of nonwastewaters which would be effective until May 8, 1992, due to the time required to develop successfully operating retort facilities.

However, the Institute believes that the two-year national variance will not provide adequate time for its member companies to properly develop retorting facilities to effectively treat K106, K071, and D009 nonwastewaters. This inadequate time will likely result in individual requests for variances for additional time.

Docket Number: LD12-00133

Commenter: PPG Industries, Inc.

Comment:

In the event that EPA selects thermal recovery as BDAT, PPG supports the proposed two-year national variance for all mercury wastes subject to the standard. Nevertheless, PPG is concerned that the probability of having a commercially viable unit for recovery of sulfide precipitated K106 or low concentration D009 at the end of two years is extremely low given the technical complexity of the project, as well as the difficulty in obtaining required permits within that time frame.

Docket Number: LD12-00143

Commenter: General Motors Corporation

Comment:

GM agrees that there is insufficient treatment capacity for mercury nonwastewaters, and supports the proposed two-year national variance (page 48481).

Docket Number: LD12-00186

Commenter: LCP Chemicals/The Hanlin Group, Inc.

Comment:

The proposed two-year national variance for mercury containing non-wastewaters should be adopted. This variance, however, may provide insufficient time to develop and install a commercially viable retorting unit. Therefore, the agency should anticipate individual company variance petitions at the end of the two year period.

Docket Number: LD12-00251

Commenter: BF Goodrich Company

Comment:

If the proposed regulation is enacted, the following comments should be considered.

- * The proposed two-year national variance for mercury containing non-wastewaters should be adopted. This variance, however, may provide insufficient time to develop and install a commercially viable retorting unit. Therefore, if necessary, the agency should grant a variance petition at the end of the two-year period.

4. Due to the problems associated with retorting and the present lack of commercially available mercury retorting processes, considerable time will be required to develop successfully operating retort facilities.

Any attempt to remove impurities in K-106 prior to thermal treatment (similar to the McDermitt ore concentration process) would generate a derived-from K-106 consisting mostly of the impurities that cause pluggage in the retort system. No means of handling such a waste has been identified.

Supports the proposed compliance dates for D-009 BDAT standards.

Docket Number: LD12-00251 (continued)
Commenter: BF Goodrich Company
Comment: (continued)

The B. F. Goodrich Company supports the two-year national variance for mercury retorting of non-wastewaters which would be effective until May, 1992 due to the time required to develop successfully operating retort facilities.

However, B. F. Goodrich believes that the two-year national variance will not provide adequate time for the proper development of retorting facilities to treat effectively K-106, K-071, and D-009 non-wastewaters. This inadequate time will likely promote a variance request for additional time.

Docket Number: LD12-00258

Commenter: AZKO Chemicals, Inc.

Comment:

Due to the time required to develop successfully operating retort facilities, the Akzo LeMoyne Chlorine Plant supports the proposed two year national variance for mercury retorting of non-wastewaters which would be effective May 8, 1990 (or whenever the final rules are promulgated) to May 8, 1992.

Due to these problems associated with retorting, Akzo supports the two year national variance for mercury non-wastewaters.

However, the two year national variance will not provide sufficient time to fully develop the necessary retorting system to treat affected K071, K106 and D009 non-wastewaters. As a result, Akzo will very likely request an extension to the treatment standard effective deadlines.

The two year national variance will not provide sufficient time to fully develop the necessary retorting system to effectively treat K071, K106 and D009 non-wastewaters. These different waste streams will require pilot scale testing to develop the design parameters including optimal operating conditions and equipment specifications for a single retorting system that will be capable of effectively treating these wastes to the regulated treatment standards. Additional time will be required to appropriate the necessary capital money to purchase this equipment, allow for equipment deliveries, equipment installation, start-up, and effective operation of the retorting system. As a result, the Akzo LeMoyne Chlorine Plant will very likely request an extension to the treatment standard effective deadlines.

Time Required to Develop Retorting Facilities - Due to the problems associated with retorting and the present lack of commercially available mercury retorting processes, considerable time will be required to develop successfully operating retort facilities.

Docket Number: LD12-00265

Commenter: Pioneer Chlor Alkali Company, Inc.

Comment:

Due to design and operational problems with retorting (as demonstrated by the PEI/IT study), Pioneer supports the proposed two-year national capacity variance for mercury containing non-wastewaters. However, due to the anticipated development time prior to actual installation, it is likely that Pioneer will find it necessary to apply for additional time extension(s).

The proposed two-year national variance for mercury containing non-wastewaters should be adopted. This variance, however, may provide insufficient time to develop and install an operationally feasible retorting unit. Therefore, the agency should anticipate a variance petition at the end of the two year period for an additional one year extension.

Pioneer supports the two-year national variance for mercury retorting of non-wastewaters which would be effective until May 8, 1992 due to the time required to develop successfully operating retort facilities.

Pioneer believes that the two-year national variance may not provide adequate time for the proper development of retorting facilities to effectively treat mercury containing non-wastewaters. This inadequate time will likely result in a Pioneer request for additional time extensions.

Due to the problems associated with retorting and the present lack of commercially available mercury retorting processes, considerable time will be required to develop successfully operating retort facilities. If the USEPA proceeds with retorting as BDAT, more than the 2 year National Capacity Variance may be needed in order to develop and install the equipment.

8-17

Mercury Wastes

Docket Number: LD12-L0018

Commenter: Mc Dermitt Mine

Comment:

Section II-6. Paragraph H: I agree with variances granted by the agency. I interpret this to give my D009 solid waste 2 years from the date of publication.

8.2 Available Mercury Retorting Capacity Is Little To None And Should Not Be BDAT**Summary:**

Four commenters (PPG Industries, Inc. (133A); University of Illinois at Urbana-Champaign (139); Lederle Laboratories (144); and the National Paint & Coatings Association, Inc. (158)) responded that little to no retorting capacity is currently available. The National Paint & Coatings Association knew of only two thermal recovery locations for mercury in the northeast United States. PPG Industries, the University of Illinois at Urbana-Champaign, and Lederle Laboratories indicated that through their investigations, no commercial facilities were retorting mercury wastes. Of these three, PPG Industries had pursued capacity for K106 while the University of Illinois at Urbana-Champaign and Lederle Laboratories had sought capacity for D009. In addition, PPG Industries had located only one facility in the United States retorting mercury ore. As a result, PPG Industries and Lederle Laboratories questioned EPA's selection of BDAT since the technology is unavailable.

Response:

EPA has evaluated these comments and determined that treatment standards for those mercury wastes amenable to recovery should be based on retorting. EPA realizes that the total number of commercial retorting facilities for mercury wastes is very small, thus the national capacity variance for wastes with mercury retorting as BDAT. The purpose of the two-year variance is to allow for development and subsequent construction of new facilities, or modification of existing ones, to meet the BDAT requirement that EPA believes is most appropriate.

Comments:

The comments relevant to this issue are presented in the following order:

- PPG Industries, Inc. (133A);
- University of Illinois at Urbana-Champaign (139);
- Lederle Laboratories (144); and
- National Paint & Coatings Association, Inc. (158).

Docket Number: LD12-00133A

Commenter: PPG Industries, Inc.

Comment:

2. Retorting is Neither Demonstrated Nor Available.

The majority of K106 waste generated in this country results from sulfide precipitation. Yet EPA has no data demonstrating that retorting can effectively treat this material. EPA bases its identification of retorting as BDAT on data derived from the retorting of mercury ores. EPA indicates in its background document that the percentage of mercury in unconcentrated ores is comparable to the percentage in K106 nonwastewater. (Background Document at p. 55). However, EPA indicates that the ores are concentrated to approximately 65% mercury prior to retorting. EPA does not discuss whether such concentrating operations are feasible for waste sludges.

Further, PPG questions whether the ore matrix is comparable to the sludge matrix for purposes of liberating the mercury. PPG suspects that liberating mercury from the sludge is likely to be much more difficult, and believes the percentage of mercury recovered is likely to be significantly lower than from the ore. This calls into question the ability to achieve a BDAT level of 630 mg/kg by retorting K106. There is no data in the record which indicates EPA's selected BDAT levels can be achieved by retorting K106. In fact, EPA's selected BDAT level is based upon a single data point from the retorting of mercury ore. For these reasons PPG believes the administrative record described in the Background Document and the preamble to the proposed rule does not support a conclusion that retorting is a "demonstrated" technology for treatment of K106.

Further, there is no evidence to support EPA's conclusion that retorting is "available" treatment for K106. EPA cannot point to a single facility that is commercially treating K106 by retorting. PPG is aware of only one operation in the United States that is retorting mercury ore. Further, for the reasons described more fully below, PPG believes it is highly unlikely that additional capacity will become available prior to the expiration of EPA's proposed two year variance for K106 waste.

For the foregoing reasons, PPG believes EPA has not justified that retorting is either a demonstrated or an available technology for treating K106 waste.

3. Retorting May Create Additional Environmental Problems.

In the preamble to the proposal, EPA recognizes that some of the selected treatment technologies are likely to result in the

Docket Number: LD12-00133A (continued)

Commenter: PPG Industries, Inc.

Comment: (continued)

cross-media transfer of hazardous constituents to air. 53 Fed. Reg. at 17616. This would no doubt be the case for mercury if retorting is chosen as BDAT for K106.

PPG believes that a treatment standard is defective under §3004(m) if it fails to "substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." Yet, EPA has failed to evaluate the impact of this cross-media transfer of mercury on human health and the environment. EPA presents no data in its proposal or Background Document to support the conclusion that retorting is likely to reduce the overall release of mercury to the environment from K106. To the contrary, PPG suspects that retorting K106 waste could result in an increase in the amount of mercury released for the following reasons.

First of all, mercury is very difficult to contain in a vapor form. Despite the use of air pollution control equipment, there will no doubt be an increase in mercury vapors in the area surrounding any retort constructed for the treatment of K106. While the retort facility would be subject to the NESHAP standards for mercury, it is unclear whether such a facility would be subject to the 2300 or 3200 grams/day limit if it exclusively processes K106 sludges. (See, 40 CFR §61.52). In either case, there is likely to be an increase of approximately one ton/year of mercury emissions to the atmosphere for each retort constructed to process K106 waste. It is unclear from the data described by EPA how many retorts would be needed to handle the total volume of K106 generated. However, PPG suspects that the required number will be greater than a simple function of retort production capacity, because of the technological limitations associated with the design of an air pollution control system able to meet the NESHAP standards.

Further, the existing NESHAP standard makes it virtually impossible for generators to consider the construction of retorts at their production facilities. Chlorine producers which use mercury chlor-alkali cells are currently subject to the 2300 grams/day limitation for mercury. PPG believes it is highly unlikely that this standard could be met at chlorine production facilities based on current technology if a retort were added.

Docket Number: LD12-00139

Commenter: University of Illinois at Urbana-Champaign

Comment:

Last year, the University disposed of only two types of hazardous wastes by direct landfill. These were lead (D008) and mercury (D009) characteristic wastes.

Next to dioxin wastes, mercury wastes have proven to be the most difficult wastes to dispose over the past two years. Last year the University disposed of 7 drums of mercury contaminated debris, material that came primarily from the cleanup of mercury spills. Thermometers, mercury switches, and mercury relays have also proven to be difficult to impossible to dispose of at any price. Again, I would question whether any capacity exists for disposal of nonwastewater mercury wastes.

Finding disposal sites for laboratory quantities (lab packs) of lead, mercury, and other non-incinerable hazardous wastes, is not easy. Many small quantity generators are unable to find sites willing to take their wastes because their volumes are too small to interest contractors.

Docket Number: LD12-00144

Commenter: Lederle Laboratories

Comment:

American Cyanamid, as part of its on-going operations at this site, generates a D009 waste stream containing elemental mercury, mercury salts and organics. While we support the proposed treatment standards for D009 nonwastewaters-high mercury subcategory, we have been unable to locate any facility within the United States which is capable of treating this type of waste in a manner consistent with the proposed rule. Our contact with other companies which use mercury or mercury compounds also revealed the same result. Although EPA is proposing a two year national capacity variance for the surface-disposal of D009 (organic-mercury) nonwastewaters and D009 (inorganic mercury) nonwastewaters, we do not have any indication that such facilities are planned or will be in-place at that time and, therefore, ask the Agency to review their basis for the selection of both the treatment standard and the two-year capacity variance.

While we support the proposed treatment standards for the high mercury subcategory we have been unable to locate any facility within the United States which is capable of treating this type of waste in a manner consistent with this proposed rule. We also do not have any indication that such facilities are planned or will be in-place at the expiration of the two-year capacity variance and, therefore, request the Agency to review their basis for the selection of both the treatment standard and the two-year capacity variance.

Docket Number: LD12-00158

Commenter: National Paint & Coatings Association, Inc.

Comment:

EPA has information from a few facilities that indicates incineration of wastes containing organo-metallics such as spent organomercury catalysts, organo-mercurials in lab packs, and paint sludges containing mercury is occurring on a routine basis. The Agency suggests that the mercury from these wastes is not destroyed by the incineration process but rather accumulates as inorganic mercury compounds on the ash, scrubber water, and wastewater treatment sludges. Therefore the Agency is specifying further treatment of incineration residues in order to further reduce the concentration of mercury to levels that minimize threats to human health and the environment. NPCA suggests that additional thermal recovery may be extremely difficult due to the limited number of thermal recovery facilities for mercury and the fact that these facilities have limited capacities. For example, there are only two thermal recovery locations for mercury in the northeast U.S.

Because of capacity limitations, both facilities could not handle the volume of incinerator ash generated by one NPCA member alone. In addition, one of the facilities is currently listed on Superfund's National Priority Site Listing.

8.3 The Variance Should Be Extended To Both The High And Low Subcategories Of K071

Summary:

Three commenters (Olin Chemicals (129); The Chlorine Institute (132); and AZKO Chemicals (258)) stated that the capacity variance should be extended to both the high and low subcategories of K071 mercury wastes. All three indicated that the capacity variance is needed for both subcategories because the proposed retorting cutoff limit of 16 mg/kg is too uncertain, and could impact planned installations of acid leaching processes, which was the promulgated (First Third) BDAT for K071.

Response:

EPA has determined that acid leaching is a developed, available, and demonstrated technology which substantially reduces mercury concentrations in K071, a waste containing low concentrations of mercury. Therefore, EPA is not promulgating the proposed revisions to the standards for K071, allowing acid leaching (promulgated in the First Third rule) to remain as the BDAT, and the First Third prohibition date to remain in effect.

Comments:

The comments relevant to this issue are presented in the following order:

- Olin Chemicals (129);
- The Chlorine Institute (132); and
- AZKO Chemicals, Inc. (258).

Docket Number: LD12-00129

Commenter: Olin Chemicals

Comment:

Olin believes that the national variance should apply to both high and low mercury subcategories for K071. Uncertainty of the cutoff limit for retorting could impact planned installations of the acid leaching process which is currently the promulgated BDAT for K071.

8-27

Mercury Wastes

Docket Number: LD12-00132

Commenter: The Chlorine Institute, Inc.

Comment:

The Institute feels that the national variance should apply to both high and low mercury subcategories for K071 if EPA promulgates its proposed standards. Uncertainty of the cutoff limit for retorting is affecting planned installations of the acid leaching process which is currently the promulgated BDAT for K071.

8-28

Mercury Wastes

Docket Number: LD12-00258

Commenter: AZKO Chemicals, Inc.

Comment:

This two year national variance should include both the high and low mercury subcategories of K071 due to the uncertainty of the retort cutoff limit which is impacting planned installations of the acid leaching treatment process which was previously identified as BDAT for K071 non-wastewaters.

8.4 Certain High Concentration Mercury Wastes Do Not Require A Variance

Summary:

The Hazardous Waste Treatment Council (HWTC) (172 and L247) commented that the capacity variance for mercury waste based on retorting is appropriate for elemental mercury and mercury oxides, but was inappropriate for mercury salts - treatable by chemical pretreatment followed by stabilization of which there is available capacity. In support of this claim, HWTC indicated that it had identified over 10 million gallons/year of this capacity.

ThermalKEM/CyanoKEM (NUKEM) (110) stated that their treatment technology is applicable to certain wastes amenable to retorting, and was willing to provide data to EPA. The only wastes the technology does not adequately treat were elemental mercury and mercury oxides. The treatment involves oxidation of the mercurous ions to the mercuric state, followed by precipitation as the sulfide. ThermalKEM/CyanoKEM (NUKEM) indicated that the technology treats the mercury waste to levels below the EP Toxic level, and that they possess available capacity of approximately 1 million gallons/year, expandable to 5 million gallons/year.

Response:

EPA disagrees that the capacity variance for certain high concentration mercury wastes is inappropriate. EPA has determined that treatment standards for those mercury wastes amenable to recovery should be based on retorting. Therefore, EPA is promulgating mercury retorting as BDAT for high concentration mercury wastes. Though inadequate mercury retorting capacity exists at present, EPA believes that sufficient capacity will be developed during the two years of the variance, ensuring that the most appropriate treatment process for high concentration mercury will be utilized after May 8, 1992.

Comments:

The comments relevant to this issue are presented in the following order:

- ThermalKEM/CyanoKEM (NUKEM) (110);
- Hazardous Waste Treatment Council (HWTC) (172); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00110

Commenter: ThermalKEM/CyanoKEM (NUKEM)

Comment:

5. D009 - Mercury Bearing Wastes

We support EPA's selection of retorting as BDAT for many mercury wastes. but we are concerned that this technology is not applicable to every waste form represented by the full range covered by the D009 waste code. In particular, for solids and debris waste the mercury retorting technology is not appropriate. Other problems with mercury retorting are as follows:

- . Highly acid or alkaline wastes can corrode retort equipment.
- . Sludges above 45 or 50% moisture may not be compatible.
- . Treatment of mercury vapors (elemented, oxides, etc.) must be addressed for scrubbing solutions used to remove mercury from off-gases produced during the refluxing process.

These issues are discussed more fully in the following reference:

- . Metal and Inorganic Waste Reclaiming Encyclopedia, Marshall Sittig, Noyes Data Corporation, Park Ridge, N.J., 1980, pages 362-366.

CyanoKEM's treatment technology is applicable to wastes described above that are not amenable to retorting. The only mercury wastes that cannot be treated are elemental mercury and mercury oxides. The chemical treatment involves oxidation of the mercurous ions to the mercuric state, followed by precipitation as the sulfide. This is a form that is of extremely low solubility in water as well as in strong acids and bases. Therefore, with this treatment, water soluble inorganic mercury is readily treated to less than EP toxic levels.

CyanoKEM can provide data to EPA in the future, on waste streams not amenable to retorting. We are currently practicing the chemical treatment described above on a full scale basis, at our current capacity of approximately 1 million gallons/year, expandable to 5 million gallons/year. Based on the comments received by EPA on the proposed Third Thirds rule, we can focus our data submittal on mercury waste streams identified by generators/industry as not amenable to retorting. We would appreciate feedback from EPA on this, to help focus our data submittal on mercury treatment.

Docket Number: LD12-00172

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The capacity variance for mercury waste based on retorting is appropriate for elemental mercury and mercury oxides. However, mercury salts are treatable by chemical pretreatment means followed by stabilization (see discussion in section on characteristic waste). For these wastes, no capacity variance is needed, since adequate chemical pretreatment and stabilization technology is available. HWTC members have capacity for over ten millions gal/year of these wastes. As a minimum, there should be no capacity variance for lab pack quantities of these wastes. One of our member companies has submitted treatability data on mercury.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC has commented on February 20, 1990 regarding many of the same comments circulated by EPA for capacity response regarding mercury waste. In reviewing our response here, EPA should also review pages 16-17, and 19-20 of our February 20, 1990 comments.

Again, as in the case of arsenic, EPA has created a false capacity issue by selecting for mercury waste a retorting technology that is not available. Many serious flaws exist with this technology as described in detail by the Chlorine Institute (LD12-00025), PPG Industries (LD12-00133), Olin Chemical Corporation (LD12-00124) and Vulcan Chemicals (LD12-00128). These commenters raise capacity concerns with respect to retorting, which more than likely will still be unavailable after the two year variance period.

Vulcan Chemical Company and PPG Industries encourage EPA to consider sulfide precipitation and stabilization as BDAT for mercury waste. The HWTC agrees with this comment, and provided chemical precipitation and stabilization data to EPA for use in setting BDAT (see HWTC February 20, 1990 comments, page 16, and Docket #LD12-00050 and 00067). The data supports that chemical precipitation and stabilization is suitable technology for mercury waste. The data provided by PPG confirms the excellent performance of sulfide precipitation and stabilization for mercury waste.

No capacity issue arises if EPA bases BDAT on chemical precipitation and stabilization. The available capacity for chemical precipitation is 338 million gallons/year, and for stabilization is 344 million gallons/year (see 54FR48475). The combined demand for D009, K071 and K102 mercury waste is only 10.4 million gallons/ year, so that there is a large excess of capacity for treatment of mercury waste (see 54FR48473).

If sulfide precipitation and stabilization is promulgated as BDAT, this will also address the capacity concerns expressed by Lederle Laboratories (LD12-00144), the National Paint and Coatings Association (LD12-00158) and the University of Illinois (LD12-00139), circulated by EPA for comment. In particular, incinerator ash will be more amenable to sulfide treatment/stabilization than to retorting, for organic mercury compounds that are incinerated.

CHAPTER 9

OTHER METALS

This chapter presents capacity-related summaries and responses for comments addressing barium (D005), cadmium (D006), and chromium (D007) wastes.

9.1 Barium (D005) Wastes

Summary:

The Agency received five comments (Envirosafe (81), Hammond Lead (153), Porcelain Enamel Institute (165), Dupont (189), and Ethyl Corporation (209)) addressing barium-related issues (D005). These comments focused primarily on available treatment capacity and variances for D005. Two of the five comments were in response to the Agency's request for information on high-organic D005 wastes (both wastewaters and nonwastewaters). Commenters addressed two issues:

- Capacity To Treat D005 Wastes Is Questionable, Consequently EPA Should Review The Need For A Two-Year National Capacity Variance; and
- Barium (D005) Wastes Containing High Levels Of Organics Do Exist.

Each of these issues are discussed in the following subsections.

**9.1.1 Capacity To Treat D005 Wastes Is Questionable; Consequently EPA Should
Review The Need For A Two-Year National Capacity Variance**

Summary:

Four commenters (Envirosafe (81), Hammond Lead (153), Porcelain Enamel Institute (165), and Ethyl Corporation (209)) addressed capacity to treat D005 wastes. Two of these commenters (Envirosafe (81) and Ethyl Corporation (209)) questioned whether available capacity exists to treat D005 nonwastewaters. One of these commenters (Envirosafe, 81) stated that the Agency failed to provide any capacity information or data on acid and water leaching of D005 nonwastewaters. (Commenter did not specify whether the waste in question was a wastewater or nonwastewater. Since the commenter referred to acid or water leaching, however, the Agency assumes the commenter is discussing nonwastewaters.) As the Agency did not provide this information, Envirosafe questions whether treatment capacity exists to treat this type of waste. Hammond Lead (153) and Porcelain Enamel Institute (165) stated that none of the facilities their organizations contacted would treat D005 wastes (commenters did not specify wastewaters or nonwastewaters) to the proposed BDAT. Envirosafe (81), Hammond Lead (153), and Porcelain Enamel Institute (165) requested that the Agency grant a two-year variance for all D005 wastes (commenters did not specify wastewaters or nonwastewaters) due to insufficient treatment capacity.

Response:

In the proposed rule, EPA proposed concentration based treatment standards for D005 wastewaters; for D005 nonwastewaters EPA proposed acid or water leaching followed by chemical precipitation as sulfate or carbonate followed by stabilization as methods of treatment. In the final rule, the Agency is promulgating concentration standards based on chemical precipitation for wastewaters and concentration standards based on stabilization for nonwastewaters. As the Agency is no longer requiring acid or water leaching treatment, EPA did not further analyze available

capacity data for this type of treatment. The Agency has identified 479 million gallons of available stabilization capacity, and 364 million gallons of available chemical precipitation capacity. If the commenters believe that their waste is significantly different from the waste used to set the treatment standard and they believe that their wastes cannot meet the treatment standard they may consider applying for a treatability variance.

Comments:

The comments requesting a variance due to insufficient treatment capacity for D005 wastewaters and nonwastewaters are presented in the following order:

- EnviroSAFE (81);
- Hammond Lead (153);
- Porcelain Enamel Institute (165); and
- Ethyl Corporation (209).

Docket Number: LD12-00081

94

Other Metals

Commenter: Envirosafe Management Services, Inc.

Comment:

Page 48434, C.

We encourage the Agency to develop a numerical standard for the D005 barium waste. In addition no capacity information was given and no data provided on the capacity for acid and water leaching of this material, (Treatment process T-59 from Appendix I Table 2 40 CFR 264) it is unclear whether or not treatment capacity exists nation-wide to handle this type waste. Therefore, we would recommend a review of the a two-year variance until appropriate treatment technology proposed for this waste is available.

Docket Number: LD12-00153

9-5

Other Metals

Commenter: Hammond Lead Products, Inc.

Comment:

Hammond Lead has contacted several hazardous waste treatment facilities regarding treating its D005 wastes to the proposed BDATs. None of these facilities have indicated that it can treat these wastes to the proposed BDATs. In developing the BDAT, EPA specifically recognized that it only had a limited amount of data upon which to rely and implied that the proposed treatment standards may not be appropriate for all D005 wastes. In light of the limited nature of the data, the unreliability of the data, EPA's reservations regarding the appropriateness of the proposed BDATs for all D005 wastes, and the lack of sufficient treatment capacity for D005 waste, Hammond Lead requests that the Agency grant a nationwide capacity variance for all D005 wastes until technologically and economically feasible treatment capacity is identified.

Similarly, EPA has proposed BDATs for D005 wastes that are not based on reliable data, that are not technologically feasible, and for which sufficient treatment capacity does not exist. Accordingly, Hammond Lead requests a national capacity variance from the proposed BDATs for D005 wastes.

Docket Number: LD12-00163

9-6

Other Metals

Commenter: Porcelain Enamel Institute, Inc.

Comment:

PEI knows of no hazardous waste treatment facilities that can treat these wastes to the proposed BDATs. In developing the BDAT, EPA specifically recognized that it only had a limited amount of data upon which to rely and implied that the proposed treatment standards may not be appropriate for all D005 wastes. In light of the limited nature of the data, the unreliability of the data, EPA's reservations regarding the appropriateness of the proposed BDATs for all D005 wastes, and the lack of sufficient treatment capacity for D005 waste, PEI requests that the Agency grant a nationwide capacity variance for all D005 wastes until technologically and economically feasible treatment capacity is identified.

Docket Number: LD12-00209

9-7

Other Metals

Commenter: Ethyl Corporation

Comment:

D005 Nonwastewaters

D005 wastes containing high levels of organics do exist! Ethyl generates a solid D005 waste containing approximately 50% organic product and 25% barium. This solid stream has typical EP toxicity values of 100-200 mg/l barium and exhibits no other hazardous characteristics. The solids are currently landfilled at a RCRA permitted facility without prior treatment. Ethyl agrees a separate treatability group should be established for these wastes, as the proposed D005 nonwastewater treatment standard is inappropriate for this waste. Ethyl Corporation does not have in house incineration capacity. Is commercial disposal capacity available for the specified treatment standard "Incineration Followed By Stabilization"?

9.1.2 Barium (D005) Wastes Containing High Levels Of Organics Do Exist

Two commenters (Dupont (189) and Ethyl Corporation (209)) addressed issues pertaining to high-organic barium wastes. Ethyl Corporation (209) indicated that their facility did not have on-site incineration capacity and questioned the availability of commercial disposal capacity for "Incineration Followed by Stabilization." Both commenters (Dupont (189) and Ethyl Corporation (209)) responded to the Agency's request for verification of the existence of high-organic D005 wastes. Dupont (189) stated that high-organic D005 wastes (commenter did not specify whether the wastes were wastewaters or nonwastewaters) exist in their research and development laboratory, and Ethyl Corporation (209) indicated that they currently generate and landfill high-organic D005 wastes at a RCRA permitted facility without prior treatment.

Response:

EPA agrees that high-organic barium wastes do exist. Although two commenters (Dupont (189) and Ethyl Corporation (209)) verified that they currently generate this type of waste, neither of the commenters provided information on the quantity of high-organic barium requiring treatment. Consequently, EPA contacted Ethyl Corporation and Dupont to obtain an estimate of the quantity of these wastes that are land disposed. Ethyl Corporation indicated that their facility land disposed approximately 7,200 gallons of high-organic barium in 1988, and Dupont estimated that their research laboratory generated approximately 120 gallons of high-organic barium requiring land disposal in 1989. Neither of these commenters expect to generate significantly larger quantities of this waste in the future. Based on these comments, EPA has determined that 7,320 gallons of high-organic barium will require treatment. EPA has identified adequate commercial incinerator capacity to treat these wastes.

Comments:

The comments addressing high-organic barium (D005) wastes are presented below:

- Dupont (189); and
- Ethyl Corporation (209).

Docket Number: LD12-00189

9-10

Other Metals

Commenter: E.I. DuPont De Nemours & Company

Comment:

The Agency has solicited information on whether D005 (barium) wastes containing high levels of organics actually exist. In our major research and development laboratory, such wastes do in fact exist. Our interest is in preserving the option to incinerate the organic fraction of these wastes. Such organics may consist of F002 or F003 solvents, other solvents, or ignitables such as Terpinol.

Docket Number: LD12-00209

9-11

Other Metals

Commenter: Ethyl Corporation

Comment:

D005 Nonwastewaters

D005 wastes containing high levels of organics do exist! Ethyl generates a solid D005 waste containing approximately 50% organic product and 25% barium. This solid stream has typical EP toxicity values of 100-200 mg/l barium and exhibits no other hazardous characteristics. The solids are currently landfilled at a RCRA permitted facility without prior treatment. Ethyl agrees a separate treatability group should be established for these wastes, as the proposed D005 nonwastewater treatment standard is inappropriate for this waste. Ethyl Corporation does not have in house incineration capacity. Is commercial disposal capacity available for the specified treatment standard "Incineration Followed By Stabilization"?

9.2 Cadmium (D006) Wastes

Summary:

The Agency received eight comments (Rayovac (69), Kinsbursky Brothers (84), INCO United States (88), Aluminum Recycling Association (97), Exide (117), NEMA (218), Owens-Illinois Specific Standards (262), and International Metals Reclamation Company (L12)) addressing cadmium (D006) capacity-related issues. Four of these commenters questioned the proposed variance for cadmium batteries. Commenters addressed four major issues:

- Sufficient Capacity Exists To Treat Cadmium Batteries, Consequently A Two-Year National Capacity Variance In Unwarranted;
- Insufficient Capacity Exists To Treat Cadmium Batteries, Consequently A Two-Year National Capacity Variance In Justified;
- Inadequate Capacity Exists To Treat The Universe Of D006 Wastewaters and Nonwastewaters, Consequently EPA Should Grant D006 Wastes A National Capacity Variance; and
- No Commercial Method Exists For Treating D006 Household Batteries, However, Thermal Treatment Is The Best Process Available

9.2.1 Sufficient Capacity Exists To Treat Cadmium Batteries, Consequently A Two-Year National Capacity Variance Is Unwarranted

Summary:

Three commenters (Kinsbursky Brothers (84) INCO United States (88) and International Metals Reclamation Company (INMETCO; L12)) stated that sufficient capacity exists to recycle cadmium batteries. One commenter (Kinsbursky Brothers, 84) stated that their facility, a permitted TSDF, currently has capacity to recycle 80,000 pounds of cadmium batteries per month. This commenter (Kinsbursky Brothers, 84) also noted that their facility plans to increase this capacity as demand for recycling increases. Two commenters (INCO United States, 88; and INMETCO, L12) stated that they have adequate capacity to recover the nickel in nickel-cadmium batteries. However, both commenters (INCO United States, 88; and INMETCO, L12) indicated that the cadmium containing residues are sent to a separate thermal recovery facility. One of these commenters (International Metals Reclamation Company, INMETCO; L12) stated that their facility thermally processes 70,000 tons of nickel-cadmium batteries per year, and that they have the capacity to treat much larger quantities of this waste. According to all three commenters, (Kinsbursky Brothers (84), INCO United States (88), and INMETCO (L12)) adequate capacity exists to treat D006 batteries, and therefore, they recommended that the Agency reconsider the proposed variance for cadmium batteries.

Response:

EPA agrees that sufficient capacity exists to treat cadmium batteries. Based on information provided by commenters and an analysis of cadmium recycling capacity, EPA has determined that 115,200 gallons of capacity is available to treat cadmium batteries. EPA contacted Kinsbursky Brothers who indicated that they have capacity to pulverize 115,200 gallons of cadmium batteries per year. After pulverization, the cadmium plates are sent to Big River Zinc. EPA contacted Big

River Zinc who indicated that they have capacity to treat 180,000 gallons of cadmium plates per year, but do not have capacity to break the batteries apart. As pulverizing capacity is the bottleneck in the recycling treatment train, EPA has determined that 115,200 gallons of recycling capacity is available to treat D006 cadmium batteries. Since TSDR data indicates that 14,278 gallons of cadmium batteries require treatment, and 115,200 gallons of treatment capacity is available, EPA is not granting a national capacity variance to these wastes.

Comments:

The comments addressing available recycling capacity for cadmium batteries are presented in the following order:

- Kinsbursky (84);
- INCO United States (88); and
- INMETCO (L12).

Docket Number: LD12-00084

9-15

Other Metals

Commenter: Kinsbursky Brothers, Inc.

Comment:

Kinsbursky Brothers, Inc. is a RCRA Part B TSDF specializing in the recycling of lead acid batteries. In 1988, our company, initiated a recycling program for nickel cadmium, cadmium containing and other alkaline batteries. Our current handling capacity for cadmium containing battery recycling is 80,000 pounds per month. We plan to increase our capacity when the availability of material warrants expansion.

Recycling Household Cadmium Containing Batteries

Kinsbursky Brothers, Inc. is currently working on a pilot project which will allow us to expand our recycling program to include household / consumer type batteries. The pilot program includes a process for size reduction of both industrial and consumer type batteries. Batteries reduced through this technology will undergo a separation process, extracting the different metals and plastics through both mechanical and chemical means. Cadmium and nickel will be electroplated into a pure metals and marketed.

This project has received positive responses from several battery manufactures and industrial users in the United States. They have asked to be kept abreast of this development and two manufactures have already asked to visit our facility early this year.

Problems Associated with Recycling Cadmium Containing Batteries

The battery recycling industries main focus has been lead acid battery. This has been for obvious reasons as lead acid batteries are intrinsic to our day to day life. Lead acid batteries are used in much greater quantities than any other battery type. Concerns for human health and the environment have prompted government at all levels to take an active pro battery recycling stance.

Batteries containing cadmium, on the other hand, have largely been ignored from the viewpoint of recycling. Concerns over cadmium entering MSW incinerators and landfills has lead some States to introduce legislation to control the disposal of household batteries. However, this legislation does not usually make provisions for recycling. The Franklin study reported that while industrial cadmium batteries were probably not discarded to the MSW, the majority of cadmium batteries would find their way into the MSW. Many companies are becoming concerned over their liability under RCRA. They are aware of their long term liability disposing batteries into landfills, however, because the recycling of cadmium batteries is not encouraged in a similar manner to lead acid batteries, cadmium batteries are being disposed of both legally and illegally into landfills.

Docket Number: LD12-00084 (continued)
Commenter: Kinsbursky Brothers, Inc.
Comment: (continued)

A major factor inhibiting the recycling of cadmium containing batteries involves the costs of transportation. Spent lead acid batteries in good condition may be transported without the use of a hazardous waste manifest, but cadmium containing batteries must be transported by a hazardous waste hauler. This is the case even though there is no difference in the materials used for battery cases in either type of battery. In many cases the generation of spent cadmium batteries is in small quantities and the generator is faced with transportation costs two to five times higher than if they had lead acid batteries, because the use of a manifest and a licensed hazardous waste hauler is required. It can cost as much as \$7000 to transport one ton of cadmium batteries from the mid west to the west coast. This may in some cases lead to illegal disposal of batteries.

Docket Number: LD12-00084 (continued)
Commenter: Kinsbursky Brothers, Inc.
Comment: (continued)

A National Capacity Variance for Cadmium Containing Batteries

The proposal for a National Capacity Variance on Land Disposal of cadmium containing batteries as stated in the November 22, 1989 Federal Register, if granted, would be detrimental for several reasons:

1. It would restrict the growth of cadmium containing battery recycling by:
 - a) Reducing the amounts of material available to recyclers
 - b) Lower the economic incentive for recycling
2. Valuable resources would be lost by land disposal
3. Advocates waste and not recovery
4. Could possibly contribute to future contaminated sites requiring remediation

It is for these reasons that Kinsbursky Brothers, Inc. opposes a National Capacity Variance on cadmium containing batteries. We would like to recommend in its place legislation and regulations that both advocates and facilitates the recycling of cadmium containing batteries. We feel that with the cooperation of the EPA and State agencies cadmium battery recycling programs can be initiated on a nationwide bases. The biggest step that can be taken in this direction would be to allow the regulatory umbrella which covers lead acid batteries to expand to include cadmium containing batteries as well.

A national capacity variance would most certainly delay the implementation and development of recycling and treatment programs over the next several years. It is on this bases that we hope the USEPA will reconsider it's position on this variance. We have attempted to demonstrate that along with current BDAT for cadmium battery recycling, new technologies are presently being developed. We have discussed certain problems hindering current and future development of recycling technologies. We sincerely hope that USEPA will find the comments we have provided useful in the development and implementation of the Third Third proposed land ban restrictions and not issue a National Capacity Variance on cadmium containing batteries.

Docket Number: LD12-00088

9-18

Other Metals

Commenter: INCO United States, Inc.

Comment:

For a number of wastes covered by the earlier Land Disposal Restriction Rules (e.g., high zinc K061) or by the present proposal (e.g., cadmium batteries, a nonwastewater form of D006), EPA has specified Thermal Recovery (or Resmelting in a High Temperature Metals Recovery Furnace) as the method of treatment.^{15/} As indicated in Part II above, we agree with EPA that thermal recovery technologies should be specified as the method of treatment under Section 3004(m)(1) of RCRA for hazardous wastes that contain recoverable metal values. Accordingly, we support the designation of Thermal Recovery as a Method of Treatment for cadmium batteries. In fact, we believe EPA should reconsider its proposal to grant a national capacity variance for cadmium batteries since, contrary to the Agency's belief,^{16/} there is capacity for thermal recovery of nickel-cadmium batteries, at INMETCO.^{17/}

^{15/} See 54 Fed. Reg. at 48436, 48457.

^{16/} See 54 Fed. Reg. at 48480/3.

^{17/} INMETCO currently processes approximately 70 tons/year of nickel-cadmium batteries to recover nickel and sends the cadmium-containing residues to an outside facility for recovery of cadmium. We expect this volume to increase in the future.

Docket Number: LD12-00088 (continued)

Commenter: INCO United States, Inc.

Comment: (continued)

To avoid possible confusion, however, EPA should make clear that when it specifies thermal recovery as a method of treatment, the thermal recovery need not occur in a single process or at a single facility. A hazardous waste may contain several recoverable metals, some of which are recovered in one thermal process, while others are recovered in a second thermal process. Nickel-cadmium batteries are a good example. While INMETCO recycles the nickel values, its process cannot recover the cadmium directly. Instead, the cadmium-containing residues of INMETCO's process are manifested as hazardous waste and sent to a separate thermal recovery facility, where cadmium, as well as zinc and lead values, are recovered.^{18/} EPA should recognize the existence of such sequential metals recovery processes when it promulgates the final rule in this proceeding.

^{18/} We understand that the facility to which INMETCO's residues are sent cannot recover nickel or chromium and cannot process wastes that contain significant concentrations of chromium.

Docket Number: LD12-L0012 9-20 .

Other Metals

Commenter: International Metals Reclamation Company, Inc. (INMETCO)

Comment:

On January 8, 1990, The International Metals Reclamation Company, Inc. ("INMETCO"), in conjunction with its affiliates, Inco United States, Inc. and Inco Ltd. (a Canadian corporation), filed Comments on EPA's proposed Land Disposal Restrictions for the Third Third Scheduled Wastes. In those Comments, we supported EPA's proposed designation of thermal recovery as a method of treatment for nickel-cadmium batteries. In that connection, we pointed out that INMETCO thermally processes approximately 70 tons/year of nickel-cadmium batteries to recover nickel and sends the cadmium-containing residues to an outside facility for recovery of cadmium. We also noted that INMETCO has the capacity to process a larger volume of nickel-cadmium batteries and expects to do so in the future. For that reason, we suggested that EPA should reconsider its proposal to grant a national capacity variance for cadmium batteries.

9.2.2 Insufficient Capacity Exists To Treat Cadmium Batteries, Consequently A Two-Year National Capacity Variance Is Justified

Summary:

One commenter (Rayovac, 69) agreed with the Agency's decision to grant a two-year national capacity variance for D006 cadmium batteries. This commenter (Rayovac, 69) stated that inadequate capacity exists to treat D006 cadmium batteries to the proposed BDAT. Due to insufficient capacity, this commenter (Rayovac, 69) indicated that a two-year national capacity variance for D006 cadmium batteries is justified.

Response:

EPA disagrees that insufficient capacity exists to treat D006 cadmium batteries. Based on information available for the proposed rule, EPA identified insufficient capacity to treat D006 cadmium batteries; consequently, EPA proposed a national capacity variance. In the proposed rule EPA proposed granting D006 cadmium batteries a national capacity variance due to a lack of identified recovery capacity. During the public comment period, two commenters identified available commercial cadmium battery recovery capacity. EPA contacted these commenters to verify their capacity. Through these contacts, and additional leads provided by these contacts, EPA has determined that the cadmium battery recovery industry is in general divided into two stages. Facilities in the first stage receive, drain, break, and/or separate out cadmium-bearing battery parts. These battery parts are shipped to primary cadmium producers where they are used as feed stock. EPA has concluded that there is less capacity for processing the intact batteries than for recovering cadmium from cadmium battery parts. Based on this analysis, EPA has identified 115,200 gallons of available commercial capacity to recover cadmium from the 7,678 gallons of D006 cadmium batteries currently land-disposed. Therefore, EPA is not granting D006 cadmium batteries a national capacity variance.

Comments:

The comment supporting the proposed variance for D006 cadmium batteries is presented below:

- Rayovac (69).

cket Number: LD12-00069

Commenter: Rayovac Corporation

9-23

Other Metals

Comment:

In Table 1, 54 FR 48376, the EPA proposes to grant a two year national capacity variance for mercury retorting (Waste Code D009) and also for the thermal recovery of cadmium from cadmium containing batteries (Waste Code D006).

National Capacity Variances

We agree that sufficient national capacity presently does not exist for either of the wastes, and that a two year variance is required to establish sufficient national capacity for each of the wastes. Rayovac strongly supports the proposed two year variances.

9.2.3 Inadequate Capacity Exists To Treat The Universe Of D006 Wastewaters and Nonwastewaters, Consequently EPA Should Grant D006 Wastes A National Capacity Variance

Summary:

Three commenters (Aluminum Recycling Association (97), Exide (117) and Owens-Illinois Specific Standards (262)) addressed available capacity for D006 wastes (Commenters did not specify wastewaters or nonwastewaters). The Aluminum Recycling Association (97) stated that the proposed regulations for cadmium were unnecessarily restrictive, and consequently, appropriate treatment capacity for furnace and incineration related baghouse dust contaminated with cadmium does not exist. Exide (117) stated that insufficient capacity exists to treat D006 wastes because treatment facilities will not be equipped or permitted to provide stabilization by May 8, 1990. Exide (117) also indicated that many stabilization facilities are located far from the waste generators, and therefore, not readily available. Owens-Illinois Specific Standards (262) stated that the Agency has not shown that adequate capacity exists to treat D006 wastes. Both Exide (117) and Owens-Illinois Specific Standards (262) suggested that EPA grant a national capacity variance until sufficient capacity has been developed.

Response:

EPA disagrees that insufficient capacity exists to treat D006 wastewaters and nonwastewaters. The commenters' comment in part, was based on concerns that the proposed treatment standard was unachievable. This is no longer a concern. In the final rule, EPA is promulgating chemical precipitation as BDAT for D006 wastewaters and stabilization or metals recovery for D006 nonwastewaters. EPA has determined that 364 million gallons of chemical precipitation capacity and 479 million gallons of stabilization capacity will be available by May 8, 1990. (This estimate includes only those units that are currently permitted and operating. The 364

million gallons of chemical precipitation capacity and the 479 million gallons of available stabilization capacity is sufficient to treat the quantity of D006 wastewaters and nonwastewaters requiring treatment. Consequently, the Agency is not granting a national capacity variance to these wastes. If commenters believe their waste differs significantly from the waste used to set the treatment standard, they may consider applying for a treatability variance. Since those commenters who suggested that insufficient stabilization capacity is available did not submit data indicating that the quantity of D006 wastewaters and nonwastewaters currently being land disposed are greater than the quantity of capacity available, EPA is unable to pursue these commenter's specific concerns.

One commenter mentioned that available capacity is located far from waste generators. The capacity analysis methodology analyzes nationwide capacity and does not make provisions for capacity located far from waste generators.

Comments:

The comments addressing capacity for D006 wastewaters and nonwastewaters are presented in the following order:

- Aluminum Recycling Association (97);
- Exide (117); and
- Owens-Illinois Specific Standards (262).

Commenter: Aluminum Recycling Association

Comment:

ARA believes that the proposed regulations with respect to lead, cadmium, and chromium are overly restrictive and unnecessarily burdensome to secondary aluminum producers. ARA further believes that current treatment standards for these metals are adequate from an environmental standpoint and should be maintained. Most critically, their operations in no way approximate the processes of other industries, including the electroplating and steel industries, upon which the EPA has indicated it has relied for experience in nominating lead, cadmium, and chromium landfill criteria. Consequently, appropriate treatment capacity for the furnace and incineration-related baghouse dust does not exist either within or external to this industry's plant facilities. Moreover, secondary aluminum furnace and incineration-related baghouse dust is non-migratory in nature once at the landfill for as long as the waste remains hazardous.

II. Unavailability of Treatment Capacity

- Because of the difficulties in treating secondary aluminum furnace and incineration-related baghouse waste, the proposed stricter standards are unlikely, if not impossible, to be achieved within secondary aluminum plants;
- No external treatment capacity at present is known with the capability of reducing the elements of EPA concern in secondary aluminum furnace and incineration-related baghouse dust to the levels proposed;
- The ARA has been exploring a joint project with the Department of Energy, Office of Industrial Programs, to develop new technologies to treat secondary aluminum furnace and incineration-related baghouse dust wastes; these activities reflect the fact that such treatment capacities do not currently exist and will require a reasonable length of time to be made practicable.

Docket Number: LD12-00117

9-27

Other Metals

Commenter: Exide Corporation

Comment:

Also for the same reasons outlined in the previous sections for D008 wastes, Exide Corporation believes that there is an insufficient number of commercially available stabilization facilities and an insufficient national capacity to ensure stabilization of all D006 wastes. Thus, Exide Corporation also requests that EPA grant a national capacity variance for D006 wastes until sufficient capacity has been developed.

Although it is Exide Corporation's understanding that SLISA's existing data for the lead recycling industry suggests that D008 low lead subcategory wastes are able to be stabilized to meet the characteristic level of 5.0 mg Pb/l, Exide Corporation's efforts to locate commercially-available treatment facilities which may be capable of providing waste stabilization services indicates that:

- A. Facilities are not equipped to provide stabilization services by May 2, 1990, or
- B. Facilities have recognized the need to provide stabilization services by May 8, 1990 but have not received permits for these operations, or
- C. Adequate stabilization capacity for increased waste volumes is not available, or
- D. The locations of facilities which could provide limited stabilization services are situated in locations which are extremely distant from the waste generation source (a situation which creates increased transportation risks).

Based upon research to date, it is Exide's belief that adequate stabilization capacity will not be available by May 8, 1990 to meet Exide's requirements.

Docket Number: LD12-00262

Commenter: Owens-Illinois

9-28

Other Metals

Comment:

Secondly, the BDAT and treatment standards for D006, D007 and D008 wastes have been developed from data applicable to only one set of conditions which generates this type of waste, i.e. electric arc furnace dust (K061), pickle liquor sludge (K0672) and electro plating sludge (P006) respectively. The application of BDAT and treatment standards based on specific waste streams, K061, K062 and P006, and then applied to the extremely large universe of varying types of wastes which exhibit D006, D007 and D008 characteristics is inappropriate. The EPA has not shown that the BDAT is applicable or that sufficient nationwide capacity exists for the universe of D006, D007 and D008 wastes to either apply BDAT to treat these wastes or that the treatment levels are achievable. The transfer of treatment standards from other listed wastes to the characteristic wastes in general should be reviewed again and an interim national capacity variance be issued for characteristic wastes until BDAT and performance standards are demonstrated for characteristic wastes.

**9.2.4 No Commercial Method Exists For Treating D006 Household Batteries, However,
Thermal Treatment Is The Best Process Available**

Summary:

One commenter (NEMA, 218) stated that no commercial method has been developed to recycle cadmium from spent household batteries. However, NEMA (218) did agree with the Agency's proposed treatment standard for cadmium batteries. NEMA (218) also stated that a two year extension would not help the prevention of land disposal because insufficient (i.e., non-existent) protective treatment capacity is available.

Response:

EPA acknowledges commenters concerns regarding spent household batteries. In any case, if these are truly household batteries, they are "household wastes" not subject to Subtitle C and not creating demand for treatment. EPA has identified adequate capacity to treat cadmium batteries, consequently, EPA is not promulgating a capacity variance to treat these wastes.

Comments:

The comment addressing treatment for household batteries is presented below

- NEMA (218).

Docket Number: LD12-00218

9-30

Other Metals

Commenter: National Electrical Manufacturing Association (NEMA)

Comment:

It should also be noted that no commercial method has been developed in this country for reclaiming and ultimately recycling the cadmium component from spent household batteries. This situation exists because the economics of the entire collection, separation and recycling process are extremely unattractive. We agree that, from a theoretical and technical point of view, thermal treatment would appear to be the best process for isolating cadmium from a used dry cell. Thus we could only say that the proposed SDAT treatment standard for cadmium batteries would appear to be academically correct.

Consequently, though the proposed rule allows a two year extension of the statutory effective date because of insufficient protective treatment capacity, even an additional one-year, under a case-by-case basis, would probably be of no help in preventing land disposal.

9.3 D007 - Chromium**Summary:**

The Agency received ten comments (Glass Packaging Institute (78), Aluminum Recycling Association (97), PPG Industries, Inc., (133), Air Products and Chemicals, Inc. (169), Owens-Corning Fiberglass Corporation (195), Division Company, Inc. (237), Owens-Illinois Specific Standards (262), Steel Manufacturers Association (SMA; 274), Specialty Steel Industry of the United States (SSIUS; 276), and HWTC (L247)) addressing capacity issues for D007 wastes. Six commenters indicated that insufficient capacity exists to treat D007 chromium wastes; five of these six commenters requested a capacity variance. Four commenters addressed issues relating to D007 refractory bricks. Commenters addressed one major issue:

- Insufficient Capacity Exists To Treat D007 Wastes, Consequently, A National Capacity Variance Is Warranted;

9.3.1 Insufficient Capacity Exists To Treat D007 Wastes, Consequently, A National Capacity Variance Is Warranted

Summary:

Six commenters (Aluminum Recycling Association (97), Air Products and Chemicals, Inc. (169), Division Company, Inc. (237), Owens-Illinois Specific Standards (262), Steel Manufacturers Association (SMA; 274), and Specialty Steel Industry of the United States (SSIUS; 276)) questioned available treatment capacity for D007 wastes. Air Products and Chemicals, Inc. (169) questioned whether there is adequate capacity at TSDF facilities to slurry solid or semi-solid D007 nonwastewaters. According to Air Products and Chemicals, Inc. (169), their facility's sandblasting waste, which exhibits a D007 characteristic, has to be slurried and acidified prior to lime/sulfide precipitation.

Division Company, Inc. (237) stated that they were unaware of any TSDF willing to invest in stabilization treatment for caustic (pH 13-14) D007 nonwastewaters. Owens-Illinois (262) stated that the Agency had not shown sufficient nationwide capacity for the universe of D007 wastes (commenter did not specify wastewaters or nonwastewaters). This commenter suggested that the Agency promulgate an interim national capacity variance for characteristic wastes until EPA can demonstrate performance standards for these wastes. Steel Manufacturers Association (274) and Specialty Steel Industry of the United States (276) stated that in order to treat D007 wastewaters to BDAT, facilities will have to implement complex chromium reduction technology, modify NPDES permits, and obtain a RCRA permit. Because of these implementation obstacles, Steel Manufacturers Association (274) and Specialty Steel Industry of the United States (276) believe that chromium reduction will not be available by May 8, 1990; consequently, these commenters requested a national capacity variance for treatment standards requiring implementation of chromium reduction equipment.

The Aluminum Recycling Association (97) stated that the proposed regulations for cadmium were unnecessarily restrictive, and consequently, appropriate treatment capacity for furnace and incineration related baghouse dust contaminated with chromium does not exist.

Response:

In the proposed rule, the Agency specified concentration standards for D007 nonwastewaters based on the performance of chromium reduction followed by lime and sulfide precipitation and dewatering. In the final rule, EPA is promulgating concentration standards based on stabilization at a level which is generally achievable. For D007 wastewaters, EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation. The Agency has identified 79 million gallons of chromium reduction followed by chemical precipitation capacity, and 479 million gallons of available stabilization capacity. Thus, sufficient capacity exists to treat D007 wastewaters and nonwastewaters. Consequently, EPA is not granting these wastes a national capacity variance. Since D007 nonwastewaters do not require lime and sulfide precipitation, slurring is not a required treatment process. Consequently, EPA does not consider slurring capacity when granting national capacity variances. If commenters believe their waste differs significantly from the waste used to set the treatment standard, they may consider applying for a treatability variance.

Comments:

Comments addressing available capacity for D007 wastewaters and nonwastewaters are presented in the following order:

- Aluminum Recycling Association (97);
- Air Products and Chemicals, Inc. (169);
- Division Company, Inc (237);

- Owens-Illinois Specific Standards (262);
- SMA (274); and
- SSIUS (276).

Commenter: Aluminum Recycling Association

Comment:

ARA believes that the proposed regulations with respect to lead, cadmium, and chromium are overly restrictive and unnecessarily burdensome to secondary aluminum producers. ARA further believes that current treatment standards for these metals are adequate from an environmental standpoint and should be maintained. Most critically, their operations in no way approximate the processes of other industries, including the electroplating and steel industries, upon which the EPA has indicated it has relied for experience in nominating lead, cadmium, and chromium landfill criteria. Consequently, appropriate treatment capacity for the furnace and incineration-related baghouse dust does not exist either within or external to this industry's plant facilities. Moreover, secondary aluminum furnace and incineration-related baghouse dust is non-migratory in nature once at the landfill for as long as the waste remains hazardous.

II. Unavailability of Treatment Capacity

- Because of the difficulties in treating secondary aluminum furnace and incineration-related baghouse waste, the proposed stricter standards are unlikely, if not impossible, to be achieved within secondary aluminum plants;
- No external treatment capacity at present is known with the capability of reducing the elements of EPA concern in secondary aluminum furnace and incineration-related baghouse dust to the levels proposed;
- The ARA has been exploring a joint project with the Department of Energy, Office of Industrial Programs, to develop new technologies to treat secondary aluminum furnace and incineration-related baghouse dust wastes; these activities reflect the fact that such treatment capacities do not currently exist and will require a reasonable length of time to be made practicable.

Docket Number: LD12-00169

9-36

Other Metals

Commenter: Air Products and Chemicals, Inc.

Comment:

8. The use of K062 performance data to derive the BDAT standard for D007 nonwastewaters (and certain other chromium-containing wastes) is inappropriate. To compare "apples to apples", performance data from the F006 Nonwastewater subcategory should have been used.

EPA has inappropriately transferred K062 chromium performance data to D007 Nonwastewaters. K062 treatment technology is based primarily on the precipitation of dissolved metals from an acidic liquid waste stream. While some D007 nonwastewaters may fit into this type of waste matrix, there are many D007 wastes which have a matrix which more closely matches K061 Nonwastewaters (a solid which passes the Paint Filter test). The BDAT chromium standard for K061 was derived F006 stabilization data.

The K062 waste stream typically consists of an inorganic acid (e.g. sulfuric or hydrochloric) and dissolved metals (e.g. iron, chromium, nickel). The chromium in K062 is predominantly trivalent chromium because the presence of iron in an liquid acidic matrix reduces any hexavalent chromium to the trivalent state. (In fact, K062 is widely used to treat other hexavalent chromium waste streams.) BDAT treatment for K062 involves precipitation of metals as a metal hydroxide/sulfide. Very little if any reduction of hexavalent chromium occurs using this treatment because the majority of the chromium is already present as the trivalent form before treatment occurs.

K062 treatment technology would not be effective in treating many types of D007 wastes that are in solid form, such as a sandblasting waste which may exhibit a D007 characteristic because of lead chromate paint residuals. Because of the waste matrix (a solid with neutral pH), adding lime or sulfide does would not result in the formation of the same type of metal hydroxide/sulfide precipitates that occur from treating K062.

To undergo K062-type treatment, the sandblasting waste would have to be slurried and acidified prior to lime/sulfide precipitation. However, we question the effectiveness of this treatment on hexavalent chromium and the resultant wet sludge will be of greater volume than the initial non-liquid waste stream. Additionally, we question whether there is sufficient TSDF capacity to slurry all of the D007 wastes which may be solid or semi-solid. We do not believe that K062 technology is "demonstrated" or "available" for all D007 nonwastewaters.

Docket Number: LD12-00237

9-37

Other Metals

Commenter: Division Company, Inc. (DURCO)

Comment:

Of additional concern to us is the fact that our waste and others like it are extremely caustic (pH 13-14) when in solution. It is our belief that little work has been done to verify the feasibility of stabilization as a treatment method for caustic sludges. In fact, an EPA report on the subject: "Summary Report: The Year 2000 Problem in Hazardous Waste Management of Solid and Liquid Hazardous Wastes" does not contain any references to stabilization of caustic sludges or solutions.

Although the proposed rule makes provisions for exemptions from the requirements, the exemptions are for Treatment Storage, and Disposal Facilities. It would be impossible for each generator of caustic solids such as our's to enter into agreements with a specific TSDF in order to do the necessary testing required to support an exemption petition. At present we know of no TSDF's that are willing to make the capital investment necessary to provide stabilization for a waste like this. In the interim we would in effect have an "undisposable" waste on hand while EPA was considering the petition with no guarantee that the petition would be granted. The caustic waste would have to be stored greater than 90 days (a RCRA violation) or the production line would have to be shut down with a resultant loss of numerous jobs in the foundry industry. Additionally, since many waste treatment plants and processes utilize high-alloy, lost-wax castings as pumps, valves, piping, extraction columns, etc, the loss of this production capability would diminish the availability of treatment for virtually all hazardous wastes in the U.S.

Docket Number: LD12-00262

9-38

Other Metals

Commenter: Owens-Illinois

Comment:

Secondly, the BDAT and treatment standards for D006, D007 and D008 wastes have been developed from data applicable to only one set of conditions which generates this type of waste, i.e. electric arc furnace dust (K061), pickle liquor sludge (K0672) and electro plating sludge (F006) respectively. The application of BDAT and treatment standards based on specific waste streams, K061, K062 and F006, and then applied to the extremely large universe of varying types of wastes which exhibit D006, D007 and D008 characteristics is inappropriate. The EPA has not shown that the BDAT is applicable or that sufficient nationwide capacity exists for the universe of D006, D007 and D008 wastes to either apply BDAT to treat these wastes or that the treatment levels are achievable. The transfer of treatment standards from other listed wastes to the characteristic wastes in general should be reviewed again and an interim national capacity variance be issued for characteristic wastes until BDAT and performance standards are demonstrated for characteristic wastes.

Docket Number: LD12-00274

9-39

Other Metals

Commenter: Steel Manufacturers Association

Comment:

7. EPA should grant a national capacity variance for any treatment standards that would require the installation of chromium reduction equipment.

If EPA requires D007 or K061 wastewaters to be treated by chromium reduction, steel companies will have to order, construct, and make operational, complex chromium reduction technology. Manufacturers of chromium reduction equipment have recently informed SMA member companies that it would take three to six months to manufacture and deliver such chromium reduction equipment. In order to install such equipment, a steel company would first have to make major modifications to its wastewater treatment system including the addition of pumps and manholes. Before a chromium reduction system could be operational, a steel company would have to obtain approval from the requisite control authority to modify its NPDES permit and perhaps even to obtain a RCRA hazardous waste treatment permit. Consequently, EPA should grant a two year national capacity variance for any treatment standards requiring the installation of chromium reduction technology.

Docket Number: LD12-00276

9-40

Other Metals

Commenter: Specialty Steel Industry of the United States

Comment:

7. EPA should grant a national capacity variance for any treatment standards that would require the installation of chromium reduction equipment.

If EPA requires D007 or K061 wastewaters to be treated by chromium reduction, steel companies will have to order, construct, and make operational, complex chromium reduction technology. Manufacturers of chromium reduction equipment have recently informed some steel companies that it would take three to six months to manufacture and deliver such chromium reduction equipment. In order to install such equipment, a steel company would first have to make major modifications to its wastewater treatment system including the addition of pumps and manholes. Before a chromium reduction system could be operational, a steel company would have to obtain approval from the requisite control authority to modify its NPDES permit and perhaps even to obtain a RCRA hazardous waste treatment permit. Consequently, EPA should grant a two year national capacity variance for any treatment standards requiring the installation of chromium reduction technology.

CHAPTER 10

F, K, U, AND P WASTES

EPA received eighteen capacity related comments regarding surface disposed F, K, U, and P wastes (capacity issues regarding deepwell injected F, K, U, and P wastes are discussed in Chapter 12). Eight commenters stated that no treatment facilities would accept certain wastes while two others argued that the standard for another waste should be based on a different technology than proposed since the proposed technology is currently unavailable. One believed EPA underestimated the volume of one waste in the capacity analysis while another commenter argued that EPA had not. Another agreed with EPA that no variance is needed for a waste that they generate. One commenter requested a variance due to its inability to achieve the treatment standard, while another requested a variance due to the lack of facilities permitted to handle its waste. One other commenter submitted data on a soon-to-be available treatment facility.

- No treatment facilities will accept F024 waste due to dioxins and furans treatment standard;
- The cyanide standard for F019 could be based on alkaline chlorination instead of wet-air oxidation, eliminating the need for a variance since the former is available while the latter is not;
- Treatment for F006 cyanide nonwastewaters is not available;
- EPA underestimated the volume of F006 wastewaters requiring treatment capacity;
- Concurrence with EPA that no variance is needed for U188 wastewaters and nonwastewaters;
- No treatment facilities will accept U105 and U106 wastewaters and nonwastewaters;
- Few, if any, treatment facilities will be permitted to handle K083 nonwastewaters, or U075 and U121 wastewaters and nonwastewaters in time for the rulemaking necessitating variances until permitting is completed; and
- An incinerator for the explosives industry is soon to be on-line.

10.1 No Treatment Facilities Will Accept F024 Waste Due To Dioxins And Furans Treatment Standard

Summary:

Seven commenters (Georgia Gulf Corporation (075); ThermalKEM/CyanoKEM (NUKEM) (110); PPG Industries, Inc. (133); Hazardous Waste Treatment Council (HWTC) (172 and L247); The Vinyl Institute (221); Vista Chemical Company (238); and BF Goodrich Company (247)) expressed their concern that treatment capacity is unavailable for F024 wastes due to the treatment standard for dioxins and furans. Five commenters (075, 133, 238, 221 and 247), all of whom are generators, listed facilities contacted that refused to accept this waste due to the standard. The Hazardous Waste Treatment Council, an association of waste treatment companies, and ThermalKEM/CyanoKEM (NUKEM), which operates a commercial treatment facility, also mentioned refusal to accept the waste as a result of the standard. The Hazardous Waste Treatment Council also mentioned that the low metal standards for F024 would probably also preclude the waste from being accepted. Georgia Gulf Corporation and PPG Industries also mentioned that they generate an F024 waste contaminated with PCBs, and pointed out that only a few facilities are permitted under TSCA and RCRA to handle both PCBs and RCRA hazardous wastes. These TSCA and RCRA permitted facilities are also refusing to accept the waste due to the F024 dioxins and furans standard.

Response:

EPA has reviewed the data submitted concerning this issue and agrees that the concentration-based dioxins and furans treatment standards created a stigma which led commercial facilities to refuse to accept the waste. Although EPA does not wish to reward this recalcitrance, EPA views restoring commercial treatment as a higher priority. EPA is therefore promulgating incineration as the method of treatment and requiring that the standards for the other constituents

in F024 remain concentration-based. The revision to the dioxins and furans treatment standard is expected to ensure that sufficient capacity is available to treat F024 (and F024 contaminated with PCBs), and that all F024 wastes containing dioxins and furans will be incinerated, thereby ensuring effective treatment of these constituents. Regarding metals, EPA feels that the treatment standards calculated from stabilization testing of F024 incinerator ash appropriately reflect the level of performance achievable via stabilization for chromium, lead, and nickel in F024. In addition, EPA has not received treatment performance data from the regulated community indicating that the proposed treatment standards cannot be met. Therefore, EPA has no reason to believe that the treatment standards proposed for chromium, lead, and nickel in nonwastewater forms of F024 cannot be reliably met on a routine basis, and foresees no problem in facilities accepting these wastes for treatment.

Comments:

The comments relevant to this issue are presented in the following order:

- Georgia Gulf Corporation (075);
- ThermalkEM/CyanokEM (NUKEM) (110);
- PPG Industries, Inc. (133);
- Hazardous Waste Treatment Council (HWTC) (172);
- The Vinyl Institute (221);
- Vista Chemical Company (238);
- BF Goodrich Company (247); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00075

Commenter: Georgia Gulf Corporation

Comment:

On June 8, 1989 the Land Disposal Restrictions for Second Third Scheduled Wastes became effective. These regulations set treatment standards for Waste Code F024, a waste produced by Georgia Gulf in our Vinyl Chloride Monomer (VCM) Production Unit. The waste is a purge stream from the direct Chlorination Reactor and contains incidentally manufactured polychlorinated biphenyls in excess of 50 parts per million.

On November 22, 1989 the proposed land disposal restrictions for third scheduled wastes was published in the Federal Register. Section III.A.7.b of the supplementary information for the proposed regulations indicates that the EPA has received information that disposal firms are refusing to accept F024 wastes and requests information concerning this matter. Georgia Gulf wishes to inform the EPA that since June 8, 1989 we have been unable to locate any disposal firm permitted for both the incineration of hazardous waste and polychlorinated biphenyls willing to accept our waste for disposal.

Prior to the effective date of the second third restrictions this waste was incinerated by ENSCO, Inc. in El Dorado, Arkansas. Since that date they have refused to accept further shipments and have expressed no interest in accepting the waste in the future. We have also contacted Rollins Environmental Services in Deer Park, Texas and Chemical Waste Management's facility in Chicago, Illinois. All firms have expressed deep concern for meeting the treatment standard of 0.001 mg/kg for the listed dibenzodioxins and dibenzofurans and have refused to accept the waste for disposal. APTUS Environmental Services of Coffeyville, Kansas has also been contacted. APTUS is presently seeking to obtain

a hazardous waste permit and has expressed a mild interest in using a portion of our F024 waste for a planned trial burn, however, they cannot accept all of the waste. The trial burn date has not been set and could be as much as 6 months away.

This situation has forced Georgia Gulf to containerize and store approximately 145,000 pounds of F024 onsite. As Georgia Gulf is not permitted to store this waste in containers for more than 90 days storage exemptions must be requested on a regular basis from the Louisiana Department of Environmental Quality. Based upon our experience with the contacted disposal firms relief from this situation is not foreseeable for at least 6 months.

Docket Number: LD12-00110

Commenter: ThermalKEM/CyanoKEM (NUKEM)

Comment:

XVII. DIOXIN STANDARDS FOR F024 WASTES

EPA notes that it has received anecdotal information that some incineration firms are refusing to treat F024 wastes because the treatment standards include standards for various dioxins and furans (Preamble p. 48450).

As a commercial incineration company, we have not accepted F024 since the standards were specified, for the very reason indicated by the EPA comment.

As a solution, we believe that if the other organic standards for F024 are met, the residue can be expected not to contain dioxins or furans at levels posing environmental threat considering that the waste is being disposed of in MTR units. The dioxin standards should therefore be deleted to insure adequate capacity for this waste.

The same considerations apply to K043 and K099, which also have treatment standards for dioxins and furans.

Docket Number: LD12-00133

Commenter: PPG Industries, Inc.

Comment:

2. FO24: In the preamble to the proposed rule, EPA describes "anecdotal information" indicating that commercial facilities have not been accepting FO24 wastes because the treatment standard includes standards for chlorinated-dibenzo dioxins and furans. (See 54 Fed. Reg. at 48450 and 48482.) PPG has experienced this problem first hand. PPG has adequate on-site capacity for most of the FO24 waste that it generates. However, it does not have any current on-site capacity to handle one FO24 waste stream that consists of solids and contains inadvertently generated PCB's in concentrations greater than 50 ppm.

There are a limited number of commercial incinerators in the United States with the necessary approvals under RCRA and TSCA to accept PPG's FO24/PCB solids for treatment. This is documented in EPA's June, 1987, Draft Final Report entitled, "Summary of Commercial Hazardous Waste Treatment/Destruction Capacity for Mixed RCRA/PCB Wastes." (Excerpts attached.) PPG is familiar with only three incineration facilities identified as having existing capacity to treat RCRA/PCB Wastes: 1) ENSCO, Eldorado, Arkansas; 2) Rollins, Deer Park, Texas; and, 3) SCA (CWM Chemical Services, Inc.) Chicago, Illinois

Since shortly before issuance of the final Second Third Land Disposal Restrictions rule in June, 1989, none of these facilities has been willing to accept FO24/PCB solids. The attached letters dated June 8, 1989, August 29, 1989, document rejections from ENSCO and CWM Chemical Services. Rollins orally indicated, in early September, that it is unwilling to accept the waste. The waste contractors have informally indicated that the dioxin standard is the cause of their reluctance to manage this waste.

PPG is preparing to submit a request for a case-by-case extension to provide relief while we develop on-site capacity for this waste. However, based on our discussions with commercial incinerators, if the dioxin standard were eliminated, capacity would be available.

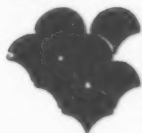
10-7

F, K, U, and P Wastes

Docket Number: LD12-00133 (continued)

Comaenter: PPG Industries, Inc.

Comment: (continued)



ensco
environmental systems company

LD12-00133.C
3112 Valley Creek Drive
Suite C
Baton Rouge, Louisiana 70808
(504) 927-9600
FAX No. 504-923-3967

WASTE TREATMENT DIVISION

June 8, 1989

Mr. Arlen Greathouse
PPG Industries, Inc.
Post Office Box 1000
Lake Charles, Louisiana 70602

Dear Mr. Greathouse:

Following evaluation of Waste Material Data Sheet (WMDS) Numbers 7671 (Sludge Kettle Bottoms), ENSCO regrets to inform you that we must reject the material due to its P024 characteristics in regard to our landfill permit, and 85511 (Sanitary Sewer Sludge) due to the fact we are not permitted to handle biological waste.

Also enclosed are laboratory analysis results from WMDS #7671. Should you have any questions, do not hesitate to call us at (504) 927-9600.

Thank you for your interest in ENSCO.

Sincerely,

ENSCO, INC.

Jean Decker
Customer Sales Representative

JD/gd

cc: Bob Koprowski
Technical Sales Rep.

Docket Number: LD12-00133 (continued)

Commenter: PPG Industries, Inc.

Comment: (continued)

LD12-00133.D



PPG Industries, Inc.
Technical Center
Lake Charles, LA

PPG Industries, Inc.

FAX 512/641-2824

August 29, 1989

PPG Industries, Inc.
P.O.Box 1000
Columbia Southern Road
Lake Charles, LA 70602

Dear Mr. Cooper:

CWM Technical Center would like to take this opportunity to thank you for submitting your waste material for incineration prequalification.

The following samples have been received and reviewed for qualification.

Profile#

Waste Name

J48130
J48131

Incinerator Feed
Sludge Kettle Bottoms

The facilities are not able to accept F024 waste streams at this time and the samples are being returned to you.

If you have any questions, please feel free to contact me.

Sincerely,

John Nixon

Docket Number: LD12-00172

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

EPA notes that it has received anecdotal information that some incineration firms are refusing to treat F024 wastes because the treatment standards include standards for various dioxins and furans (Preamble p. 48450). Virtually all commercial hazardous waste incineration companies are members of the HWTC. None of our members have accepted F024 since the standards were specified, nor do they intend to, for the very reason indicated by the EPA comment. Further, we believe that if the other organic standards for F024 are met, the residue can be expected not to contain dioxins or furans and those standards can therefore be dropped.

We would also recommend that EPA review closely its proposed metal treatment standards for F024. Those extremely low levels would probably effectively preclude the wastes from being accepted. Not only would the low levels prevent the waste from being co-burned with other wastes, but they would raise serious risks about the treatability of any subsequent incinerator clean-out ash and slag.

Docket Number: LD12-00221

Commenter: The Vinyl Institute

Comment:

On November 22, 1989 the proposed land disposal restrictions for Third Third scheduled wastes were published in the Federal Register. 54 Fed. Reg. 48372 (Nov. 22, 1989). Section III.A.6.b. of the supplementary information for the proposed regulations indicates that EPA has received information that disposal firms are refusing to accept F024 wastes and requests information concerning this matter. 54 Fed. Reg. at 48450. The Vinyl Institute wishes to confirm that since June 8, 1989, at least three member companies have been unable to locate disposal firms willing to take their F024 waste. Prior to the effective date of the Second Third restrictions, these companies had their F024 waste incinerated by disposal firms, but now, these disposal firms refuse to take the F024 waste. Presumably, this is because the F024 treatment standards require testing of incinerator ash for chlorinated dibenzo dioxins and furans.

The present situation has forced some Vinyl Institute member companies to containerize and store their F024 waste onsite. As these companies are not permitted to store this waste in containers for more than 90 days, exemptions must be requested on a regular basis from EPA or state agencies authorized to implement the Resource Conservation and Recovery Act. Clearly, these stopgap measures to handle F024 waste cannot continue. EPA is obligated to ensure that alternative waste disposal techniques and facilities exist before banning the land disposal of specific wastes such as F024.

Docket Number: LD12-00238

Commenter: Vista Chemical Company

Comment:

In the November 22, 1989 Federal Register on page 48450, the Agency solicited comments on the treatment capacity and the treatment standards for the listed waste F024. Vista Chemical company (Vista) is a manufacturer of 1,2 dichloroethane (EDC) by the direct chlorination and the oxychlorination processes. Vinyl chloride monomer is subsequently produced through the thermal cracking of EDC into vinyl chloride and anhydrous HCl. As a result of these processes, waste materials are generated which meet the listed definition of F024 waste. Vista as a generator of F024 wastes, respectfully submits these comments regarding the F024 treatment standards and treatment capacity problems which have arisen.

First, let me thank the Agency for opening this issue for formal comments. This indeed is a serious situation which began on the effective date of the Second Third final rule, June 23, 1989. Very shortly thereafter the major hazardous waste vendors refused to accept F024 wastes for treatment. ENSCO declined approval for our F024 profile on July 12; CWMI and Rollins also declined shortly thereafter. I discussed the capacity problem with Mr. Jim Burlow of your Washington office on July 18.

When questioned for the reasons of rejection, the vendors responded relaying a series of difficulties which the F024 treatment standards caused, either directly or indirectly. At first there appeared to be concern, by the vendors regarding the achievability of the chlorinated dibenzo furans and dioxins treatment standards. Ash disposal problems were also cited as reasons for not accepting our F024 wastes. The possibility of segregating waste streams and dedicating a kiln for a specific F024 campaign was investigated but was determined to be both impractical and unreasonably expensive.

The possibility of a "Case by Case Extension" as allowed by 40 CFR 268.5 has also been pursued with various vendors. However, since the problems as identified above could still exist in two years, vendors were not willing to enter into a binding contract at this time. Vista has been unable to determine that there is any treatment capacity for F024 wastes.

Docket Number: LD12-00238 (continued)

Commenter: Vista Chemical Company

Comment: (continued)

Vista is a generator of F024 wastes and has limited storage capacity. The fact that there is no available treatment capacity, has caused us undue storage problems. Vista was forced to seek an extension of the "90 day rule" from the State of Louisiana to allow time to find alternate storage facilities this past July. We now find that our only alternative is to store these materials in a properly permitted commercial RCRA facility until the treatment capacity issue is settled. This is an extra burden financially and administratively for Vista. The long-term availability of this third party storage capacity is uncertain at this time, and it is not inconceivable that this option would no longer be available in the near future. If this were to occur, Vista would eventually be forced to shut the Vinyl Chloride Monomer unit down, seriously affecting a major portion of Vista's business.

In summary, Vista maintains that the existing treatment standards have caused significant capacity problems which we are unable to effectively deal with and request a more reasonable approach. Indeed while the Agency anticipated a certain national treatment capacity to be available, Vista has been unable to determine that there is in fact any capacity available at all. It appears that counter to the landban goals which, were to require treatment for F024 wastes, the opposite has occurred and that the existing treatment standards have prevented F024 wastes from being treated at commercial facilities. Vista has also determined that 1,2 dichloroethane would be a suitable surrogate parameter for the chlorinated dibenzo dioxins and furans as currently listed in the treatment standard.

Docket Number: LD12-00247

Commenter: BF Goodrich Company

Comment:

Commercial hazardous waste disposal firms are refusing to accept any waste stream designated as F024.

We have discussed with various waste disposal firms their position on accepting hazardous waste streams generated by our facilities. During those conversations, they indicated they would not accept any waste stream which would either require extraordinary testing, have adverse public comment or would potentially lead to testing all or part of their incinerator ash for chlorinated dibenzo dioxins and furans. Since the F024 treatment standards require such testing, they would refuse to take F024 wastes. The firms contacted which would not accept F024 waste for incineration include Chemical Waste Management-Chicago, Illinois, Rollins-Houston, Texas and Liquid Waste Disposal (LWD)-Calvert City, Kentucky.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC has commented previously (January 8, 1990) on the issue of dioxin treatment standards for F024 waste. The HWTC confirmed the Agency's discussion in the preamble of the proposed third thirds rule, that incineration companies are not accepting F024 waste because of the burden associated with testing for the dioxin treatment standards, as well as because of RCRA permit restrictions on dioxins. The HWTC suggested other surrogates for dioxins that are precursors and also actual BDAT constituents in F024 waste, in contrast to dioxins which are not found in these wastes.

The comments circulated by EPA regarding F024 capacity agree with our comments previously made. For example, Vista Chemical Corp. (Docket LD12-00238), confirms that dioxin is not present in the F024 waste they generate, and suggests 1,2-dichloroethane as a surrogate/dioxin precursor that is present. BF Goodrich (Docket #LD12-00247), and Georgia Gulf Corporation (LD12-00075) also confirm that they have not been able to identify incineration facilities to accept their F024 waste.

The creation of an artificial capacity crisis by the selection of an inappropriate BDAT treatment standard is easily corrected by revision of the treatment standards. The use of a dioxin precursor surrogate should address the concerns of incineration companies resulting in available capacity for F024 waste.

10.2 The Cyanide Standard For F019 Could Be Based On Alkaline Chlorination Instead Of Wet-Air Oxidation, Eliminating The Need For A Variance Since The Former Is Available While The Latter Is Not

Summary:

Two commenters made remarks concerning the availability of treatment for F019 cyanide wastewaters and nonwastewaters. USPCI (137) urged EPA to set a treatment standard for cyanide based on alkaline chlorination since this technology is commercially available while the proposed wet-air oxidation technology lacks commercial capacity. Ford Motor Company (180) recognized the lack of wet-air oxidation capacity and suggested the possibility of transferring the F006-F009 cyanide standards based on alkaline chlorination to F019.

Response:

EPA agrees that the cyanide standard for F019 wastewaters and nonwastewaters can be based on alkaline chlorination and has done so, along with some other modifications, in the final rule. EPA is promulgating concentration standards based on alkaline chlorination and chromium reduction followed by chemical precipitation for F019 wastewaters, and alkaline chlorination followed by stabilization for F019 nonwastewaters. EPA determined that adequate treatment capacity is available for the volume of F019 wastewaters and nonwastewaters requiring treatment. Therefore, EPA is not promulgating a national capacity variance for either F019 wastewaters or nonwastewaters.

Comments:

The comments relevant to this issue are presented in the following order:

- USPCI, Inc. (137); and
- Ford Motor Company (180).

Docket Number: LD12-00137

Commenter: USPCI, Inc.

Comment:

H. F019

USPCI urges EPA to set an immediately effective cyanide standard for this waste based upon alkaline chlorination. USPCI supports this option because the technology is currently available as opposed to the wet air oxidation technology which is currently unavailable.

Docket Number: LD12-00180

Commenter: Ford Motor Company

Comment:

Proposed Treatment Standard for F019 (III.A 6.a.2)

We have recently reviewed a draft document entitled "Characterization and Treatment of Wastes from Metal-Finishing Operations" prepared for EPA by PEI Associates, Inc. While we have not yet reviewed the Background Document for F019 wastes, it appears that the proposed treatment standards were calculated from data obtained during a bench scale test of a wet-air oxidation (WAO) unit using waste from the Ford Connersville, Indiana plant. It should be noted that several analytical discrepancies in the data obtained by the EPA contract consultant could not be explained. In analyzing the F019 filter cake from our wastewater treatment plant, low spike recoveries (<5%) were obtained for total cyanide analysis of 2470 mg/kg; amenable cyanide could not be determined due to interference. A sample of raw waste from the process obtained for WAO testing was analyzed to contain 5000 mg/kg total cyanide. However, when the waste was diluted 4 to 1 for the WAO test, total cyanide was analyzed to be only 293 mg/l instead of the expected 1250 mg/l. Of this 293 mg/l total cyanide, 240 mg/l was analyzed as amenable cyanide. Previous studies have shown this waste to be comprised of very stable complex ferricyanide compounds, very little of which is amenable to chlorination.

While EPA is proposing to grant a two year capacity variance based on a lack of capacity to treat these wastes, it was noted in the referenced report that there are currently no full-scale WAO systems in commercial operation for cyanide treatment. We encourage EPA to investigate whether full-scale WAO systems are currently being designed, permitted and installed to insure adequate capacity in two years.

EPA should adopt treatment standards based on the WAO performance (after clarifying the attendant analytical problems) or transfer treatment standards based on alkaline chlorination of F006 through F009 wastes. The data now in existence does not provide a basis for us to recommend that EPA set treatment standards based on either of these two options. EPA should continue to investigate the most appropriate treatment and analytical methods for these wastes. If in the next two years, EPA determines that different treatment standards or methods are more appropriate for these wastes or that WAO is not commercially available, EPA can revise the standards at that time.

10.3 Treatment For F006 Cyanide Nonwastewaters Is Not Available

Summary:

The National Association of Metal Finishers (NAMF) (154) stated that no commercial TSD facility would accept F006 cyanide nonwastewaters under the BDAT of precipitation, settling, filtration, and stabilization. Therefore, a priori, there is insufficient national capacity to treat this waste. In addition, NAMF questioned whether the technology was truly available since results, which EPA has refused to reveal, were based on information from a single TSD facility claiming enough capacity to handle the entire volume of this waste. NAMF contacted this facility and does not believe the facility will accept the F006 cyanide waste. The Hazardous Waste Treatment Council (HWTC) (L247) disagreed with the NAMF, and stated that there is adequate commercial treatment capacity for F006 cyanide nonwastewaters, and that additional capacity is available through licensing of treatment systems from various vendors.

Response:

EPA disagrees that there is inadequate commercial treatment capacity for F006 cyanide nonwastewaters. Standards for F006 cyanide nonwastewaters were promulgated in the Second Third Land Disposal Restrictions rule (54 FR 46606, June 23, 1989) and were not reopened in this proceeding. The only matter dealt with in today's rule is the cyanide analytic method. EPA has no reason to believe that the cyanide standard is unachievable when the revised method is used, and has documented the basis for this conclusion in the record. Information concerning F006 nonwastewaters should have been submitted during the public comment period designated following the Second Third proposed rule. Concentration-based standards for F006 cyanide nonwastewaters were promulgated based on alkaline chlorination followed by chromium reduction, chemical precipitation, and stabilization. EPA determined that of the 129 million gallons of F006 nonwastewaters land disposed, only 13 million gallons would require alternative commercial

treatment capacity for cyanides. EPA determined that sufficient alkaline chlorination capacity exists to treat the F006 cyanide nonwastewaters, and therefore did not promulgate a national capacity variance for these wastes. In addition, concentration-based standards do not preclude the use of other technologies so long as the treatment standard is achieved. The NAMF may wish to pursue other treatment options such as those expressed by the Hazardous Waste Treatment Council. If the NAMF believes that their waste is significantly different from that used to determine BDAT, and that their waste cannot meet the BDAT standards, then the NAMF may want to pursue a treatability variance.

Comments:

The comment relevants to this issue are presented in the following order:

- National Association of Metal Finishers (NAMF) (154); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00154

Commenter: National Association of Metal Finishers (NAMF)

Comment:

The Subject BDAT is not "Available"

The subject proposal, (FR54, page 48380) states "To be "available" the technology itself or the services of the technology must be able to be purchased, and the technology must substantially diminish the toxicity of the waste or reduce the likelihood of migration of the waste hazardous constituents. EPA notes that it prefers to base BDAT on technologies that further the statutory goal of waste minimization and recycling." This definition of "available" can be broken into two (2) portions. The first concerns the technology, while the second concerns reduction in waste toxicity and volume. The toxicity and waste minimization aspects of these comments will be presented below. This section will examine the technological implications of the requirement that the technology be "available".

The first portion of the Agency's definition of "available" is that, "the technology itself" must be able to be purchased. Despite repeated requests from commentators, the Agency has refused to provide details of the technology used to establish the proposed BDAT. Since the Agency has not defined "the technology itself", it is clearly not "available". The limited and poor quality information available indicates that the type of technology used, as discussed in detail above, is different from that employed at most generators of P006 (nonwastewater) CN-T. For both of these reasons, the proposed BDAT does not satisfy the requirement that "the technology itself" be "available".

The second portion of the Agency's definition of "available" is that "the services of the technology must be able to be purchased". Since the Agency has not revealed details of the technology, it is not possible to evaluate whether the services of the technology can be purchased. It is known, however, that the BDAT is based on information from a single commercial TSD facility. That facility has stated that it has capacity to handle all of the P006 (nonwastewater) CN-T. Since the Agency has refused to reveal details of the waste which was analyzed by that TSD under the designation "P006 (nonwastewater)", it is not possible for the regulated community to determine whether such services are, in fact, available to be purchased. Indeed, specific experience with the TSD in question indicates that it will not accept P006 (nonwastewater), if such P006 (nonwastewater) is generated using the indicated BDAT. The Agency has thus created a "catch 22" for the regulated community. Based on the docket, there is no proof that the services of the technology are able to be purchased. Since the technology itself has not been revealed and is understood to be proprietary, by the Agency definition the technology is not "available".

Docket Number: LD12-00154 (continued)

Commenter: National Association of Metal Finishers (NAMF)

Comment: (continued)

The Paucity of Data and the Lack of Any Generator-Specific Data Makes the BDAT Invalid

It is apparent that the BDAT for F006 (nonwastewater) CN-T is based on only two (2) analyses of a dilute, nonrepresentative sample from one (1) commercial TSD. This is not a valid database for generator locations or for any other TSD.

The subject proposal states (FR54, page 48381) "Where data exists for only one (1) technology, the Agency uses best engineering judgement to assess whether the particular technology represents the best applicable technology for that particular waste, and whether the data indicate the treatment system was well designed and well operated." First, it must be questioned whether the "particular technology" evaluated for F006 (nonwastewater) CN-T "represents the best applicable technology for that particular waste". The primary data were from a single commercial TSD, and the samples treated and subsequently analyzed were dilute and unrepresentative sample of (alleged) F006 (nonwastewater). Further, with only two (2) data points, and those being from a dilute, non representative sample, it is not possible to determine whether the data "indicate that the treatment system was well designed and well operated". Since the Agency has kept the details of the technology confidential in protecting the proprietary interests of their informant, the regulated community cannot perform its own evaluation. Since only one technology was evaluated, only two (2) samples of a dilute and unrepresentative waste were treated, and the details of the technology were not revealed, it does not appear that "best engineering judgement" can be applied to assess the situation.

Further, the regulated community has not been apprised of the electroplating experience of the Agency personnel performing the "best engineering judgement". It is not at all clear that the Agency judgement is "best".

Given the absence of data regarding waste, waste treatment technology, comparative evaluations with generators and other TSD's, and the undisclosed qualifications of technical personnel performing evaluations, the use of "best engineering judgement" to establish BDAT for F006 (nonwastewater) CN-T makes such an analysis invalid.

FAILURE TO DEMONSTRATE NATIONAL TREATMENT CAPACITY FOR F006 (NONWASTEWATER)

BDAT, as specified for F006 (nonwastewater), includes precipitation, settling, filtration, and stabilization. As described above, the docket does not show that F006 (nonwastewater) CN-T has been successfully treated after application of the proposed BDAT. Indeed, we know of no commercial TSD facility which will accept F006 (nonwastewater)

Docket Number: LD12-00154 (continued)

Commenter: National Association of Metal Finishers (NAMF)

Comment: (continued)

CN-T when subjected to the BDAT as specified. There is thus, a priori, insufficient national capacity to treat the F006 (nonwastewater) CN-T. In addition, since the docket contains inadequate data to indicate that a generator of F006 (nonwastewater) can achieve the proposed limitations using a specified BDAT, the proposal, defacto, mandates the use of a commercial TSD.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The comments expressed by the National Association of Metal Finishers (NAMF) (LD12-00154) regarding the unavailability of cyanide capacity are totally inaccurate. The NAMF claims that cyanide destruction technology selected by EPA as BDAT is proprietary and therefore not available. Not only is there adequate commercial treatment capacity for F006 and other cyanide wastes, but also capacity is available through licensing of chemical and wet air oxidation systems from various vendors. The comments of NAMF are therefore not based on facts.

10.4 F006 Wastewaters Require A Capacity Variance Due To EPA's Underestimation Of The Total Volume Requiring Treatment Capacity

Summary:

U.S. Air Force Plant #44 (135) stated that the total volume of F006 wastewaters determined by EPA was significantly underestimated (5.1 million gallons/year) since their facility generates in excess of 20 million gallons annually, and that a national capacity variance is necessary. U.S. Air Force Plant #44 also believed that EPA had missed additional facilities generating F006 wastewaters, along with CERCLA and RCRA corrective action volumes. Finally, U.S. Air Force Plant #44 stated that EPA should take into consideration additional volumes due to the ambiguity of the F006 wastewater definition. The Hazardous Waste Treatment Council (HWTC) (L247) disagreed with U.S. Air Force Plant #44, stating that no hard data were provided and that no other comments were received concerning this issue. The HWTC also mentioned that even if U.S. Air Force Plant #44 is correct, the total volume of 25.1 million gallons is well under the available capacity of chemical precipitation and chemical stabilization of 338 million gallons and 345 million gallons, respectively.

Response:

EPA agrees with U.S. Air Force Plant #44 that the capacity analysis did underestimate the volume of F006 requiring alternative commercial treatment. EPA verified that 19.75 million gallons of F006 wastewaters were being land disposed by U.S. Air Force Plant #44 and would require alternative treatment capacity following the Third Third rulemaking. EPA has incorporated this new data into the capacity analysis and has determined that only one million gallons of this additional volume requires cyanide treatment (alkaline chlorination), while the remaining volume requires chromium reduction and chemical precipitation. EPA agrees with the Hazardous Waste Treatment Council that excess treatment capacity is still available following inclusion of the U.S. Air Force Plant #44 volume. For F006 cyanide wastewaters, EPA has determined that there is sufficient alkaline

chlorination capacity to treat the volume of this waste. For F006 wastewaters containing treated cyanides and/or chromium and other metals, EPA has identified adequate chromium reduction and chemical precipitation capacity. Therefore, EPA is not granting a two-year national capacity variance for any F006 wastewaters.

Comments:

The comments relevant to this issue are presented in the following order:

- U.S. Air Force Plant No.44 (135); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00135

Commenter: U.S. Air Force Plant #44

Comment:

In light of the guidance on F006 wastewaters provided to date, we suspect that EPA has significantly underestimated the volume of F006 wastewaters actually generated. Therefore, we recommend that EPA promulgate a clear definition of "F006 wastewaters," and that it grant a national capacity variance for F006 wastewaters.

If EPA believes its statement to be correct, however, then its prior guidance is wrong, and must be revised. This circumstance is yet another example of the confusion as to what constitutes F006 wastewater, and therefore emphasizes the need for the promulgation of a clear definition of this waste stream. In light of the seeming uncertainty about its definition, generators will be unable to classify accurately their waste streams, and EPA will be unable to estimate accurately the volume of F006 wastewaters generated.

3. The volume of F006 wastewaters are not accurately defined:

In the Third-Third proposed rulemaking, EPA provides determinations of alternative capacity and effective dates for all surface disposed wastes that are included in the waste codes for which treatment standards have been proposed. Table III.B.1.(b) indicates that for F006, the required alternative commercial treatment/recycling capacity is 5.1 Million gallons per year.

As an indicator of the potential under-estimation of that required alternative capacity determination, EPA needs to consider the following information and its potential influence on their granting a national capacity variance:

Docket Number: LD12-00135 (continued)

Commenter: U.S. Air Force Plant #44

Comment: (continued)

1. This commentor, U.S. Air Force Plant #44, has submitted a case-by-case extension petition for the Third-Third land disposal restrictions. Although we respectfully disagree with EPA's interpretation as to what constitutes "FO06 wastewaters", nonetheless we have submitted that application based on our understanding of earlier discussions with the agency regarding their interpretation of this waste code. Our application identifies in excess of 20 million gallons annually as the off-site alternative capacity required to manage the "FO06 wastewaters" generated at this single site. This volume alone is approximately four times the magnitude of the amount that EPA had identified as being required.

2. Based on the above single case, there must be other facilities nationally, which in light of the possible FO06 wastewater definitions, could enormously increase this shortfall in required alternative capacity.

3. Finally, since these wastewaters are also assumed to be generated in both CERCLA remedial actions and RCRA corrective actions, and due to the number of these sites which currently exist, with many more anticipated in the future, it is believed that the national capacity shortfall will be substantially higher than anyone might imagine.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

D. F006 Wastewaters

The HWTC does not agree with comments of US Air Force Plant #44 (Docket #LD12-00135), that the EPA has underestimated the volumes of F006 wastewaters requiring treatment capacity. No hard data is provided to account for this claim, the commenter merely states that they alone generate 4 times the national volume of F006 wastewaters at their one site. Again, as in the P and U case cited above, there are potentially waste minimization measures, such as segregation of spill residues from stormwater collection systems, that would reduce this volume. EPA should audit this plant and confirm this claim before taking this comment into consideration in the final thirds rule.

Even if this is correct, no other commenter expressed disagreement with EPA's estimates of the volume of F006 wastewaters. Assuming US Air Force Plant #44 is right, then the national quantity of F006 wastewaters generated is 25.1 million gallons/year instead of the 5.1 million gallons determined by EPA. This is well under the available capacity of chemical precipitation and chemical stabilization of 338 million gallons/year and 345 million gallons/year respectively. Therefore, the concerns expressed by this commenter do not justify a national capacity variance for F006 wastewaters.

10.5 Concurrence With EPA That No Variance Is Needed For U188 Wastewaters Or Nonwastewaters

Summary:

EPA received one comment concerning U188 wastewaters and nonwastewaters. The Chemical Manufacturers Association (CMA)(145) agreed with EPA that no capacity variance was needed for U188 wastewaters and nonwastewaters which had proposed concentration-based treatment standards based on incineration. However, CMA expressed concern that capacity might not be available for U188 wastewaters and nonwastewaters if the BDAT were changed to incineration as a method of treatment, and reserved the right to request a national capacity variance in the event that the BDAT were to change and capacity was felt to be insufficient.

Response:

EPA acknowledges this comment. BDAT for U188 nonwastewaters remains a concentration standard based on the performance of incineration as proposed. For U188 wastewaters, the treatment standards have changed. For today's final rule, EPA has evaluated appropriate wastewater treatment data, and is promulgating a concentration standard based on biological treatment, or wet-air oxidation followed by carbon adsorption. EPA believes that adequate treatment capacity is available to treat U188 wastewaters and nonwastewaters and is not granting a national capacity variance for these wastes.

Comment:

The comment relevant to this issue is presented as follows:

- Chemical Manufacturers Association (CMA) (145).

Docket Number: LD12-00145

Commenter: Chemical Manufacturers Association (CMA)

Comment:

IV. A National Capacity Variance Is
Probably Not Necessary for U188 Wastes

EPA believes that incineration will provide efficient destruction of P and U constituents in wastewaters. See 54 Fed. Reg. at 48391 (col. 2). EPA has conceded, however, that incineration may not always be practical. EPA has proposed treatment standards for U188 wastes based upon incineration, and sufficient national capacity exists, for the treatment of U188 wastes. EPA has not, therefore, proposed to grant a national capacity variance for these wastes. See 54 Fed. Reg. at 48477 (col. 3).

The Panel concurs with EPA that adequate treatment capacity appears to exist for U188 wastes. The Panel's concurrence is premised, however, on a concentration-based treatment standard, not a standard based on incineration as a treatment method. If EPA is considering the promulgation of incineration as a method of treatment for these wastes, then the Panel reserves its right to request a two-year national capacity variance based upon a lack of incineration capacity, should such a request prove necessary and appropriate.

Finally, although adequate treatment capacity appears to exist for U188 wastes, if EPA issues treatment standards based on incineration, the Panel reserves its right to request a two-year national capacity variance for these wastes if such a request proves necessary and appropriate.

10.6 No Treatment Facilities Will Accept U105 And U106 Wastewaters And Nonwastewaters**Summary**

Olin Chemicals(129) stated that no commercial incinerators would accept U105 (2,4 Dinitrotoluene) and U106 (2,6 Dinitrotoluene) and requested that EPA grant a treatability variance.

Response:

EPA disagrees with the statement that no commercial incinerators will accept U105 and U106 wastewaters and nonwastewaters. EPA has identified several incinerators that are permitted to accept these wastes (e.g., Ross Environmental Services). If Olin Chemicals believes that its waste is significantly different from the U105 and U106 wastewaters and nonwastewaters used to determine the BDAT treatment standard, then Olin Chemicals may want to pursue a treatability variance. EPA would also like to remind Olin Chemicals that the wastewater standards for these wastes have changed. For today's final rule, EPA has evaluated appropriate wastewater treatment data, and is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for U105 and U106 wastewaters. Treatment standards for U015 and U106 nonwastewaters remain as concentrations based on incineration. EPA believes that adequate treatment capacity is available to treat the volume of these wastewaters and nonwastewaters and is not granting a national capacity variance for either one of them.

Comments:

The comment relevant to this issue is presented as follows:

- Olin Chemicals (129).

Docket Number: LD12-00129

Commenter: Olin Chemicals

Comment:

USEPA is specifying a concentration based standard for U105 and U106 (2,4 and 2,6 Dinitrotoluene respectively) based directly on incineration. Olin has checked with the various commercial incinerators throughout the United States and has not been able to find one that would accept the waste U105 or U106. The facilities will accept some "derived-from" U105 and U106 depending upon concentration and form. A list (along with dates and contacts) for each of the incinerators contacted is attached as Appendix I.

At this time, Olin has not been able to locate any alternate treatment to land disposal of U105 or U106, and request that the Agency not restrict land disposal.

As was stated above (see comments to Nitro Compounds III.A.3.f.(4).(e).), Olin has been unable to find a commercial incinerator that will accept U105 or U106 waste (2,4 and 2,6 Dinitrotoluene). For this reason, we believe that USEPA's statement that "sufficient capacity exists for treatment of these non-halogenated organic wastes..." is in error. Olin therefore requests a treatability variance for these waste streams.

Listed below are the commercial incinerators contacted regarding the acceptance of U105 and U106 (2, 4 and 2,6-dinitrotoluene) at their facilities. In all cases, the incinerators refused to accept these wastes:

Company	Date Contacted	Individual Contacted	Address City/State	Telephone No.
Chemical Waste Management	11/29/89	Jerry Levi	Houston, TX	713/875-4631
Ensco	12/02/89	Jack Burke	Williamsville, NY	716/632-0966
Thermal Oxidation (TOC)	12/21/89	Larry Davis	Reidsville, NC	919/342-6106
Olin Enviro-	01/02/90	George Cooper	Bridgeport, NJ	609/467-3105

10.7 Few, If Any Treatment Facilities Will Be Permitted To Handle K083 Nonwastewaters, Or U075 And U121 Wastewaters And Nonwastewaters In Time For This Rulemaking Necessitating Variances Until Permitting For These Wastes 's Completed

Summary:

Mobay Corporation (281) indicated that although EPA has identified adequate treatment capacity for K083 nonwastewaters, EPA did not take into consideration whether the facilities were permitted to treat this waste. Mobay did not believe that commercial stabilization facilities would be properly permitted and requested that a capacity variance be granted for K083 nonwastewaters until permitting allowed for proper treatment of the waste. Racon, Inc. (L023) stated that incinerators usually use U211 (carbon tetrachloride) destruction as the monitoring compound in trial burns, and that U075 (dichlorodifluoromethane) and U121 (trichlorofluoromethane), because they are more difficult to incinerate than U211, would not be included in permits, rendering capacity unavailable for these two wastes.

Response:

EPA disagrees that no commercial treatment facilities are permitted to accept K083 nonwastewaters, or U075 and U121 wastewaters and nonwastewaters for treatment. In 1986, when EPA conducted the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (TSDR Survey), several facilities reported that they were accepting K083 nonwastewaters for stabilization (e.g., Rollins Environmental Services (LA) Inc.). Therefore, facilities are permitted to accept K083 waste, and that a capacity variance to allow time for permitting is unnecessary. EPA has also identified incinerators (Chemical Waste Management (Chicago) and Ensco) that are permitted to accept U075 and U121. EPA realizes the difficulty in incinerating these two wastes, however, most incineration facilities have eliminated this problem through blending, allowing for both acceptance and proper treatment of these wastes. Therefore, EPA is not granting

a national capacity Variance for either of these wastes.

Comments:

The comments relevant to this issue are presented in the following order:

- Mobay Corporation (281); and
- Racon, Inc. (L023).

Docket Number: LD12-00281

Commenter: Mobay Corporation

Comment:

II. Proposed Effective Dates for K083 Nonwastewaters

Mobay urges EPA to grant a two-year national capacity variance for the stabilization required for the nickel in K083 nonwastewaters.

EPA's calculations of national capacity are based on physical constraints (i.e., waste volume throughput) and typically do not include an evaluation of whether facilities have RCRA permits in place to accept a specific waste on the date of finalization of a land ban. A commercial facility with otherwise available physical capacity may not be able to accept-for-treatment a particular waste if the facility's permit does not allow it to do so. Even though EPA has recently promulgated several rulemakings which make the permit modification process easier, these modifications, for the most part, have not been adopted in authorized states. States are not required to adopt these streamlined procedures since they result in "less-stringent" rules.

Mobay anticipates that commercial stabilization facilities which have traditionally received nonorganic wastes (F006, EP toxic metals, etc.) will not have the appropriate RCRA/HSWA permits to be able to accept K083 nonwastewaters for stabilization because this is waste which a stabilization facility would not reasonably be expected to have received prior to this proposed rulemaking. Since most of these facilities are in authorized states, permit modifications will require a minimum of six months. Further delays will also result because commercial facilities generally do not continuously submit permit modification requests, but generally wait until they have several proposed modifications in hand and submit these as one request.

Comment Number: LD12-L0023

Commenter: Racon, Inc.

Comment:

5. Dichlorodifluoromethane and trichlorofluoromethane should not be regulated under RCRA as U listed wastes. These compounds are not hazardous and were included under RCRA due to their ozone depletion potential. It is our understanding that carbon tetrachloride destruction is used as the monitoring compound for conducting trial burns for regulated incinerators. Considering that dichlorodifluoromethane and trichlorofluoromethane are more difficult to incinerate than carbon tetrachloride there would be no incinerators permitted to burn these materials without permit modification by EPA. It appears this in and of itself would create a shortage of treatment capacity.

10.8 An Incinerator For The Explosives Industry Is Soon To be On-Line**Summary:**

One commenter supplied updated data on a commercial treatment facility. Atlas Environmental Services, Inc. (015) provided information on the construction and permitting of an incinerator designed for reactive wastes (D003, K044, K045, K046, and K047).

Response:

EPA acknowledges this data on future capacity. EPA has identified that existing capacity is adequate for treating the volumes of these surface-disposed wastes, and therefore is not granting a national capacity variance for them.

Comments:

The comment relevant to this issue is presented as follows:

- Atlas Environmental Services, Inc. (015).

Docket Number: LD12-00015

Commenter: Atlas Environmental Services Incorporated

Comment:

Atlas Environmental Services, Inc., (AES), is a wholly owned subsidiary of Atlas Powder Company, located near Duenweg in Jasper County, Missouri. AES is a full-service reactive waste management company, providing waste analysis, packaging, transportation, and incineration services to the explosives manufacturing industry. AES has submitted a RCRA Part A and B Application in the state of Missouri to construct and operate an incinerator to deactivate off-specification and obsolete explosives, pharmaceuticals, ammunition, and propellants, as well as materials contaminated with reactive waste. Reactive waste feeds that will be processed and deactivated through incineration in this facility are in the form of solids, liquids, and slurries. Reactive wastes are generated by explosives manufacturers, other manufacturers, and by the U.S. Department of Defense (DOD). The EPA waste codes for these reactive wastes are D003, K044, K045, K046, and K047.

CHAPTER 11
K048-K052 WASTES

EPA received eight letters commenting on treatment capacity for K048-K052 petroleum refining wastes. Two commenters submitted data on volumes requiring treatment capacity while three submitted data on available capacity. Three commenters indicated that a strain on capacity would develop when the K048-K052 variance expired while two others expressed that the BDAT should be based on two technologies so as to eliminate this strain. One commenter stated that the proposed treatment standards could not be reached, making capacity unavailable. An outline for discussion of these issues is presented below:

- Questionable availability of commercial incineration capacity for K048-K052 wastes;
- Data submissions concerning K048-K052 management practices and wastes requiring treatment capacity; and
- Capacity is unavailable for treatment of K048-K052 incineration residues due to the proposed treatment standard.

11.1 Questionable Availability Of Commercial Incineration Capacity For K048-K052 Wastes

Summary:

BP America, Inc. (098) expressed concern that the expiration of the First Third's variance for K048-K052 wastes, on August 8, 1990, would put a considerable strain on available incineration capacity. BP America stated that the more stringent BDAT standards proposed in the Third Third rule have removed the incentive to construct solvent extraction units, thus forcing the industry to rely on incineration or other possible EPA compliance options, such as no-migration petitions. ThermalKEM/CyanoKEM (NUKEM)(110) and the Hazardous Waste Treatment Council (HWTC) (172) stated that EPA should base BDAT on both incineration and solvent extraction, as in the First Third rule, to ensure that sufficient treatment capacity would be available for these wastes following expiration of the First Third's variance. The Hazardous Waste Treatment Council (L034) also mentioned that while it supports the expiration of this variance, many incinerators are declining to accept K048-K052 wastes because of the waste code carry through applied to refractory brick. The HWTC indicated that this refusal is a result of the stabilization standard for chromium, which is unachievable when applied to chromium refractory brick. Cadence Chemical Resources, Inc. stated that considerable treatment capacity for K048-K052 nonwastewaters has recently come on-line or is coming on-line, and provided data on this capacity. Cadence Chemical Resources urged EPA not to extend the effective date for K048-K052 nonwastewaters beyond six months.

Response:

EPA has determined that currently there is inadequate treatment capacity for surface-disposed K048-K052 nonwastewaters. The TSDR Survey indicates that 642,000 tons of K048-K052 wastes will require alternative treatment capacity (i.e., will be displaced from land disposal and will require treatment). This volume is further supplemented by the residual volumes which will require treatment. EPA realizes that this information is dated, and has analyzed data provided by industry

treatment companies, and others, to obtain as current an assessment for treatment capacity as possible. More recent information indicates that the volume requiring alternative treatment is much smaller. Cadence Chemical Resources stated that the volume requiring capacity was closer to 350,000 - 400,000 tons annually based on a survey taken in January. In addition, based on informal contact with the American Petroleum Institute, it appears that the industry may be able to manage approximately three quarters of these wastes on-site after August 1990, through practices not involving land disposal (primarily on-site incineration, reuse as fuel, use in coking, and solvent extraction). (This figure is based on an informal survey of 93 API member companies and assumes that none of the pending no-migration petitions for land treatment units will be granted. However, this estimate does not account for the uncertainty and timing of constructing and obtaining permits for on-site disposal/treatment facilities.) Therefore, assuming a best-case scenario (i.e., on-site capacity is available), approximately 161,000 tons per year of these wastes will require alternative treatment capacity.

EPA estimates that 91,000 tons of commercial treatment capacity for K048-K052 wastes exists today in the form of sludge/solid incineration and reuse as fuel capacity (these wastes are often suitable for use as alternative fuels in industrial furnaces provided that they are first dewatered). This capacity includes Ash Grove Cement Company's six kilns. There presently is very little solvent extraction capacity on-line. This treatment capacity would be inadequate even if EPA were to assume that the industry could treat 75 percent of these wastes on-site as mentioned in the informal API survey. However, EPA has data indicating that by the end of 1990, Chemical Waste Management, Rhone-Poulenc, along with United Cement Company and Southdown, Incorporated, will provide an additional 352,000 and 101,000 tons per year of incineration and fuel substitution capacity, respectively. (Refer to Appendix K of the Third Third background document for a complete discussion on EPA's incineration and fuel substitution analysis.) These additions to existing capacity would be almost sufficient to treat the volume of waste indicated in the TSDR

Survey. EPA has determined that dewatering of these wastes is feasible and would significantly reduce the volume requiring alternative treatment. Waste minimization and the development of on-site capacity will also further reduce this volume. Thus, EPA believes that there will be sufficient treatment capacity by the end of 1990. Therefore, EPA is granting a six month national capacity variance, lasting until November 8, 1990 (this effectively extends the industry's prohibition compliance date three months from the date of August 9, 1990, established in the First Third rulemaking).

For treating K048-K052 wastes, EPA has developed treatment standards based on both incineration and solvent extraction. Therefore, the treatment standards were developed specifically to ensure that they would not preclude the use of either technology. In response to the concern regarding refractory brick, EPA has established a separate treatability group for inorganic solids debris exhibiting a characteristic, which includes refractory brick. EPA would consider extending this classification to inorganic debris contaminated with listed wastes if presented with data indicating that this is a general problem not particularly solvable through either a treatability variance or case-by-case extension. EPA also notes that chromium refractory brick may be recoverable.

Comments:

The comments relevant to this issue are presented in the following order:

- BP America, Inc. (098);
- ThermalKEM/CyanoKEM (NUKEM) (110);
- Hazardous Waste Treatment Council (HWTC) (172);
- Hazardous Waste Treatment Council (HWTC) (L034); and
- Cadence Chemical Resources, Inc.

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

Construction, by August 8, 1990, of additional treatment units which could meet BDAT limits is probably not possible. The more stringent BDAT limits for K048-K052 proposed in this rulemaking has removed the incentive to construct additional solvent extraction facilities to treat these wastes.

Although BP cannot be sure that its projections can be extrapolated to the entire refining industry, we believe that unless USEPA immediately takes measures to allow additional land disposal of K048-K052 by, for example, providing a workable "no migration" petition process, significant amounts of K048-K052 wastes will be treated in commercial incinerators. After August 8, 1990, EPA should consider this demand upon capacity when determining whether additional variances for lack of alternative capacity are warranted.

Docket Number: LD12-00110

Commenter: ThermalKEM/CyanoKEM (NUKEM)

Comment:

VII. K048 THROUGH K052 WASTES

We urge EPA to base BDAT on both incineration and solvent extraction technologies. On this basis, no additional capacity variances would be needed for K048 through K052 waste after August 8, 1990.

We urge EPA to establish treatment standards that allow the applicability of both incineration and solvent extraction. This will insure that adequate treatment capacity is available after August 8, 1990 to properly treat these wastes.

Since the original First Thirds final treatment standards were based on both incineration and solvent extraction technologies, we recommend that EPA set BDAT based on these standards on a permanent basis, and that the recently proposed third thirds standards, based entirely on solvent extraction, not be promulgated with the final rule. The only problem with the original final first thirds standards were the BDAT standards for xylene and naphthalene. Since it is valid to set BDAT standards based on a chemically similar constituent (see EPA Methodology Document for Setting BDAT) we recommend that the xylene, non-wastewater standard be set at 9.5 mg/Kg, the same as was set for benzene and toluene, which are similar constituents. Using the same rationale, the naphthalene standard can be set at 7.7 mg/Kg, the standard for phenanthrene which is a similar constituent. In the third thirds data set, the standard for phenanthrene and naphthalene are set at identical levels.

By promulgating the first third treatment standards as final, with xylene and naphthalene established on the basis described above, EPA will be allowing for the use of both incineration and solvent extraction technologies. The regulated community is also prepared for these treatment standards since August of 1987, and by promulgating these standards as final, EPA will avoid a possible treatment capacity crisis if the new proposed third thirds standards were to take effect in May 1991. In addition, the new proposed ethyl benzene standard of 0.08 mg/Kg is not achievable using both technologies on a routine basis.

Docket Number: LD12-00172

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC urges EPA to base BDAT on both incineration and solvent extraction technologies. On this basis, no additional capacity variances would be needed for K048 through K052 waste after August 8, 1990. The capacity data presented in Section I on D001 waste and under separate HWTC comments shows that for HWTC members, sufficient incineration capacity exists to manage these wastes. Coupled with the readily available solvent extraction technology, no capacity variance is needed.

HWTC urges EPA to establish treatment standards that allows the applicability of both incineration and solvent extraction. This will insure that adequate treatment capacity is available after August 8, 1990 to properly treat these wastes. Since the original First Thirds final treatment standards were based on both incineration and solvent extraction technologies, the HWTC recommends that EPA set BDAT based on these standards on a permanent basis, and that the recently proposed third thirds standards, based entirely on solvent extraction, not be promulgated with the final rule. The only problem with the original final first thirds standards were the BDAT standards for xylene and naphthalene. Since it is valid to set BDAT standards based on a chemically similar constituent (see EPA Methodology Document for Setting BDAT) the HWTC recommends that the xylene, non-wastewater standard be set at 9.5 mg/Kg, the same as was set for benzene and toluene, which are similar constituents. Using the same rationale, the naphthalene standard can be set at 7.7 mg/Kg, the standard for phenanthrene which is a similar constituent. In the third thirds data set, the standard for phenanthrene and naphthalene are set at identical levels.

Docket Number: LD12-00172 (continued)

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment: (continued)

By promulgating the first third treatment standards as final, with xylene and naphthalene established on the basis described above, EPA will be allowing for the use of both incineration and solvent extraction technologies. The regulated community is also prepared for these treatment standards since August of 1987, and by promulgating these standards as final, EPA will avoid a possible treatment capacity crisis if the new proposed third thirds standards were to take effect in May 1991. In addition, the new proposed ethyl benzene standard of 0.08 mg/Kg is not achievable using both technologies on a routine basis.

As an alternative, the Council would endorse revisions to the currently effective BDAT standards that reflect the performance of other data sets provided that the data submitted meets the Agency's QA/QC protocols; the data is provided by "commercially available" technologies, not merely bench scale technologies; at and, provided that the data produced from such results are analyzed in accordance with the Agency's standard statistical procedures for analyzing multiple data sets and setting BDAT, namely the analysis of variance (ANOVA) statistical methods. Another approach provided for the Agency's consideration would be to set the BDAT levels at that of the PQL for nonwastewater residues.

Based on the results of the HWTC interlaboratory PQL study on nonwastewater residue standards, the HWTC identified the following BDAT standards for K048 through K052 wastes, consistent with achievable PQLs.

Docket Number: LD12-L0034

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

VI. COMMENTS PERTAINING TO DATA SUBMITTED ON K048-K052 WASTES

A. General Comments

We have reviewed the subject material made available to us by the EPA. Our comments that follow are intended to supercede the comments submitted by HWTC on this subject on January 8, 1990 and January 28, 1990. This change is justified based on the extensive data comments provided us to review by EPA.

First, we support the expiration of the capacity variance on August 8, 1990, and interim application of the First Third standards to allow for an implementation period for the new standards.

The original metals BDAT standards from the August 1988 rule are seriously flawed for reasons described above and must not go into effect on August 8, 1990. In another section of these comments the HWTC discusses the issue of debris waste and concerns of our members, as well as the glass industry, for compliance with metals standards on chromium refractory bricks. Many oil companies have made inquiries of certain of our incineration members to conduct trial runs on their K048-K052 waste streams. Certain of our members are declining to conduct these trial runs because of the issue of waste code carry through applied to refractory brick, and the problems encountered with refractory disposal after 8/8/90 if these waste are incinerated prior to the Third Thirds rule going final due to the current unachievable metals treatment standards. For reasons discussed in these comments, our earlier comments, and those arguments made by Vision Ease, the Glass Packaging Institute, and CMA, refractory brick is not amenable to stabilization. Unless EPA changes its exaggerated application of the waste code carry through principle, and allows for practical alternatives such as described in our comments on debris, needed capacity for K048-K052 will be unavailable due to a senseless requirement to stabilize inherent chromium in chromium refractory brick. This issue demands high priority and immediate resolution by EPA in finalizing the Third Thirds rule.

Comments Received May 5, 1990 From Cadence Chemical Resources, Inc.

As May 8 is only a few days away, we must urgently call your attention to the fact that there is currently available treatment capacity for a significant portion of this waste, and that more treatment capacity will soon be available. We strongly urge you to consider this information in making your final decision.

Cadence has developed and patented technologies for recycling hazardous waste fuel (HWF) for use in cement kilns. (See attached patent.) Along with cement companies such as Ash Grove Cement Company and Southdown, Inc., we have several HWF-burning projects now fully underway and several more coming on-line in the next few months.

Unlike others who manage HWF for cement kilns, our patented technology involves the use of "solid" (non-pumpable) HWF. We have kept EPA personnel closely informed of developments in the solids area, and EPA has obtained extensive stack test data from our cement kilns both from EPA's testing and our own which clearly show the environmental integrity of our process. Many K048-52 waste streams are readily usable as solid HWF in facilities using the Cadence technology.

In the past, availability of cement kiln HWF capacity has been a key factor in EPA's decision not to grant national capacity variances for certain wastes (such as "California list HOCs"). EPA also specified "fuel substitution" as BDAT for several waste codes in the "Third Third" proposal, and EPA personnel have made clear to us that this was done in large part to avoid granting national capacity variances.

Thus, EPA's consistent policy has been to fully consider cement kiln capacity before granting national capacity variances, and we fear that Mr. Clay's recommendation is a clear departure from this policy. The result will be that -- contrary to congressional and agency policy -- large volumes of wastes will go untreated before land disposal even though the treatment capacity for such wastes exist.

Comments Received May 3, 1990 From Cadence Chemical Resources, Inc.

Before turning to the specifics of our capacity, I should note that we must alert you to a few basic legal concerns over Mr. Clay's recommendation. First, EPA never proposed to grant a blanket national capacity extension for K048-52 wastes. It proposed an extension only for those constituents for which EPA was proposing more stringent BDAT controls than specified in the First Third. In fact, because of some confusion in the Third Third preamble in this respect (54 Fed. Reg. 48472), our representative contacted Ms. Bassi, the EPA "national capacity" contact listed in the preamble. She explained quite clearly on February 23 that EPA was not proposing an extension with respect to the unchanged standards.

As to Mr. Clay's key assumption -- a lack of capacity -- we can offer the following information for your consideration. Ash Grove currently has available a maximum annual capacity to accept 105,000 tons of K048-K052 wastes.¹ This capacity exists at the following authorized and operating Ash Grove kilns:

Foreman, Arkansas facility
Kiln #2 22,000 tons
Kiln #3 22,000 tons

Chanute, Kansas facility
Kiln #1 26,000 tons
Kiln #2 26,000 tons

Louisville, Nebraska facility
Kiln Hum 10,000 tons
Kiln ACL 26,000 tons

(Of this total capacity of 132,000 tons, only 27,000 tons are currently being used, leaving 105,000 tons currently available.)

¹ In our January 8, 1990 comments on the Third Third regulations we indicated that 90,000 tons of annual capacity existed for solids energy recovery. That estimate did not include the Louisville ACL kiln that has since come on-line. Also, modifications to the solids feed mechanism have allowed kilns to increase the rate of admitting solids, thereby increasing capacity.

Comments Received May 5, 1990 From Cadence Chemical Resources, Inc.

In addition to the Ash Grove kilns, Southdown is in the final stages of authorization for two kilns located in Louisville, Kentucky and Knoxville, Tennessee. Each is expected to be operating by August, 1990. The Louisville kiln will have a maximum annual capacity of 26,000 tons, and the Knoxville kiln a capacity of 70,000 tons. Together they will add another 96,000 tons of annual capacity. Thus, the combined maximum capacity that will be available by August, 1990 is 201,000 tons.

Both Ash Grove and Southdown are also in the process of retrofitting facilities or seeking necessary approvals to burn HWF at additional facilities. It is anticipated that in 1991 an additional 131,000 tons of capacity will become available at the following facilities:

Ash Grove	
Foreman, Arkansas	
Kiln #1	26,000 tons
Southdown	
Fairborn, Ohio	27,000 tons
Odessa, Texas	26,000 tons
3rd Licensee ¹	52,000 tons

We are aware that past EPA studies have assumed a need for as much as 600,000 tons of capacity per year. However, our analysis demonstrates that the total quantity of such wastes generated is actually about 350,000-400,000 tons annually.

Our numbers are based on a survey of K048-K052 wastes undertaken by Cadence in January 1990 to determine how many of these wastes are capable of being used for energy recovery. One hundred fifteen (115) of the 181 active refineries in the United States responded with data on volumes of K048-K052 hazardous wastes generated, dewatering processes employed, and disposal options used. Our analysis of this current data indicates that past EPA estimates significantly over-estimate the amount of waste generated and thus, the treatment capacity needed. We believe the current reduction in the total quantity of wastes generated is the result of several factors, including a reduction in the number of refineries now operating, more widespread use of modern dewatering techniques, and waste minimization efforts by the refineries.

¹ Active negotiations are underway to license an additional company, currently permitted to receive HWF fuel, to use the Cadence patent for burning solid HWF.

Comments Received May 5, 1990 From Cadence Chemical Resources, Inc.

Since heat content is an important consideration in the use of any fuel source, Cadence analyzed samples received from 22 refineries at the 5000 Btu level, since this is a commonly used minimum level when evaluating wastes for energy recovery applications. Our analysis shows that 25-30% of these K048-K052 wastes are above 5000 Btu per pound and thus, can be used for energy recovery in cement kilns.

In addition, by modifying current dewatering techniques to eliminate the use of filter aids, filter cakes in the 4000-4500 Btu/pound range could be increased to 5000-5500 Btu/pound. Our current evaluation indicates that such changes could make an additional 20-25% of K048-K052 wastes available for use in energy recovery.

In sum, it appears that of the 350,000-400,000 tons of K048-K052 wastes currently generated, an estimated 125,000 to 175,000 tons could be used for energy recovery with Cadence's technology. And as demonstrated above, available capacity exists to handle these wastes.

You may note from the data supplied above that some of our capacity is not currently available, but is projected to become available within the next six months. This should not be a problem, as all generators of these wastes can store on-site for 90 days even if they are not RCRA T/S/D facilities. For those that are T/S/D facilities, they may store on-site for up to one year if they are accumulating for valid land ban treatment.

At the very least our data suggest that a one-year extension is wholly unwarranted. In light of the fact that we have capacity on-line now and will have additional capacity on-line in six months, we urge as an alternative that only a 6-month extension be granted. Although we believe our start-up projections to be accurate, EPA would always have the discretion to grant further variances if our projections prove incorrect. EPA has previously recognized that this approach is more consistent with congressional intent to ban land disposal at the earliest possible time. (See 51 Fed. Reg. 1693, column 2, January 14, 1986.)

Comments Received May 5, 1990 From Cadence Chemical Resources, Inc.

Finally, at a minimum EPA must exclude from any national capacity variance petroleum refining wastes capable of being used for energy recovery. Our data clearly demonstrate adequate existing capacity for these wastes. As EPA itself stated in the preamble to the Third Third regulations "there is clearly no reason to grant national capacity variances when EPA can define a reasonable subcategory for prohibited wastes for which there exists treatment capacity." (54 Fed. Reg. 46474, column 3.) In excluding K048-K052 wastes capable of being used for energy recovery from any national variance EPA should consider the need to discourage practices designed to lower the Btu content so as to make these wastes unusable for energy recovery.

11.2 Data Submissions Concerning K048-K052 Waste Management Practices And Volumes Requiring Commercial Treatment Capacity

Summary:

In the Third Third Proposed rule, EPA requested data on current volumes of K048-K052 requiring treatment capacity, and present and future waste management plans. Three commenters submitted such data. BP Research submitted data on the solvent extraction unit in operation at BP Oil's Alliance, Louisiana, refinery with a total capacity slightly exceeding the refinery's daily production rate of mechanically treated material. BP America, Inc. (098) provided management data, including the present land treatment and landfilling operations it is conducting and planned incineration following promulgation of the Third Third rule. E.I. DuPont De Nemours & Company (189) provided waste volumes it received from Exxon Bayway believed to be destined for incineration following the final rulemaking.

In a report from the California Department of Health Services, CF Systems is reported to have installed a solvent extraction system for Texaco, Port Arthur, Texas, with a capacity of 200 barrels per day, and is expanding this capacity to between 500 and 1,000 barrels per day. CF Systems is also reported to have provided a Unocal refinery near San Francisco with two treatment units designed to treat 200 and 1,000 barrels per day, respectively. The California Department of Health Services' report also indicated that Chevron, Exxon, and Shell have been investigating the use of solvent extraction for alternative treatment capacity, and that Chevron is currently building an extraction unit, but that no technical information is yet available. The report also identified refineries with on-site incinerators, waste volumes generated in California and possible management practices for these wastes, and the volume that Chevron sent to land treatment at its Richmond land farm facility.

Response:

EPA has reviewed current K048-K052 waste management practices and associated volumes to determine the amount of waste requiring alternative treatment capacity. For this analysis, EPA has been compiling information from facilities on the volume of waste land disposed which will require alternative commercial treatment following the Third Third rule. EPA appreciates the data submitted during the public comment period. Much of these data are already included in the capacity analysis. EPA has incorporated as much of the new data as possible, however several submissions were not in sufficient detail for the capacity analysis and consequently EPA could not use it. For example, the data submitted by CF Systems, from a report prepared by the California Department of Health Services, provided volume data for the state of California. EPA reviewed this information, but was unable to incorporate these data because (1) data supplied only documented volumes in California, and could not be extrapolated nationally, (2) data included both RCRA hazardous and nonhazardous wastes, and (3) some of the facility specific data was already included in the analysis. However, general trends, such as the development of solvent extraction, were evaluated and indicated that the use of this technology for managing K048-K052 wastes is currently limited.

The TSDR Survey indicates that 642,000 tons of K048-K052 wastes will require alternative treatment capacity (i.e., will be displaced from land disposal and will require treatment). This volume is further supplemented by the residual volumes which will require treatment. Based on informal contact with the American Petroleum Institute, it appears that the industry may be able to manage approximately three quarters of these wastes on-site after August 1990, through practices not involving land disposal (primarily on-site incineration, reuse as fuel, use in coking, and solvent extraction). (This figure is based on an informal survey of 93 API member companies and assumes that none of the pending no-migration petitions for land treatment units will be granted. However, this estimate does not account for the uncertainty and timing of constructing and obtaining permits

for on-site disposal/treatment facilities.) Therefore, assuming a best-case scenario (i.e., on-site capacity is available), approximately 161,000 tons per year of these wastes will require alternative treatment capacity.

EPA estimates that 91,000 tons of treatment capacity for K048-K052 wastes exists today in the form of sludge/solid incineration and reuse as fuel capacity (these wastes are often suitable for use as alternative fuels in industrial furnaces provided that they are first dewatered). There presently is very little solvent extraction capacity on-line. This commercial treatment capacity would be inadequate even if EPA were to assume that the industry could treat 75 percent of these wastes on-site as mentioned in the informal API survey. Therefore, EPA has determined that there is a need for a six month national capacity variance, lasting until November 8, 1990 (this effectively extends the industry's prohibition compliance date three months from the date of August 8, 1990, established in the First Third rulemaking). EPA is aware of additional capacity coming on-line and soon to be on-line, and believes that by November 8, 1990, there will be adequate commercial incineration and fuel substitution capacity to satisfy demand. There may also be solvent extraction capacity available by effective date, although there are sharply conflicting estimates in the record of how quickly solvent extraction capacity can be brought on-line. EPA would be unjustified, however, in extending the national capacity variance until solvent extraction capacity is available. Thus, EPA's decision is based on its best estimates of when treatment capacity of any type will be available to accommodate these wastes.

EPA recognizes that these data are not the most precise, in some cases. In addition, EPA is concerned with using data that it obtains at the very end of the rulemaking in making such decisions (albeit these data tend to corroborate other existing information regarding amounts of solids combustion capacity coming on-line). Therefore, based on further information provided to EPA, EPA may amend the capacity extension in today's rule (through the use of appropriate

rulemaking procedures).

Comments:

The comments relevant to this issue are presented in the following order:

- BP Research (055);
- BP America, Inc. (098);
- E.I. DuPont De Nemours & Company (189); and
- CF Systems (230).

Docket Number: LD12-00055
Commenter: BP Research
Comment:

BP SOLVENT EXTRACTION PROCESS DESCRIPTIONS

The BP Solvent Extraction Process is a union of three distinct technologies which together yield a chemically-fixed solid material. These are mechanical treatment for volume reduction by removal of water and hydrocarbons, solvent extraction for residual hydrocarbon removal, and chemical fixation for constituent immobilization. This section provides a general description of the Process unit at Alliance Refinery, and includes discussions of the unit operations which implement and integrate these technologies. Further information is available in BP's 1988 submittal (Reference 3).

1.0 Process Design

A block diagram of the Process showing its relationship to the waste streams generated at Alliance Refinery is presented in Figure 1. As illustrated in this diagram, the Process can be completely integrated with existing refinery operations.

The first unit of the Process is mechanical treatment using a filter press. In this unit operation, liquid wastes are mechanically treated (deliquified) in a recessed plate filter press, with the filtrate processed in a decant/separation tank. Precoat materials and sludge conditioning agents are utilized in this process to facilitate mechanical treatment and oil recovery.

The central unit operation of the Process is a batch extraction vessel. This unit operation is designed to remove residual hydrocarbons present in the material from the filter press. The extraction of oil from the filter cake material is accomplished by contacting it with hydrocarbon solvents drawn directly from the refinery. The deoiled solids remaining in the extractor are mixed with water and pumped out of the extractor as a deoiled sludge-water slurry.

The third unit operation of the Process is fixation (stabilization) which is conducted in a conventional filter press which receives the deoiled sludge-water slurry. Prior to charging the press, pozzolanic reagents are added to the slurry. Thus the deliquification of the deoiled sludge-water slurry by the press is accompanied by pozzolanic reactions which immobilize metals and other constituents in the product filter cake. Filtrate from the press is returned to the extraction unit to slurry the next batch of extracted solids.

2.0 Unit Operation Descriptions

Mechanical Treatment

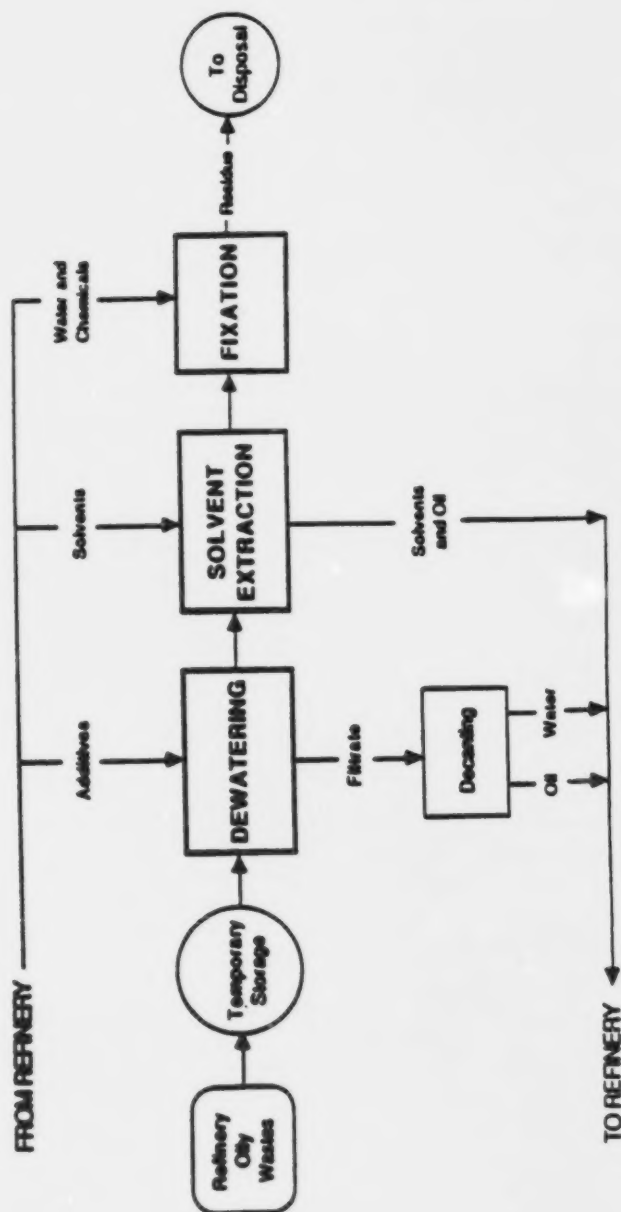
Mechanical treatment operations are sometimes used in the petroleum industry as part of the wastewater treatment system to recover oil in refinery sludge. Mechanical treatment is also widely used in the pulp and paper, metal finishing, chemical, pharmaceutical, aviation, steel, transportation, food, paint, and municipal waste treatment industries.

Docket Number: LD12-00055 (continued)

Commenter: BP Research

Comment: (continued)

FIGURE 1
REFINERY WASTE TREATMENT BY SOLVENT EXTRACTION



Docket Number: LD12-00055 (continued)

Commenter: BP Research

Comment: (continued)

For petroleum refining wastes, mechanical treatment reduces the volume of waste by removal of substantial amounts of oil and water from the waste. In addition, mechanical treatment of refinery wastes has been shown by the American Petroleum Institute (Reference 1.2) to substantially reduce the total and leachable levels of refinery waste constituents. The most common devices used for this purpose employ pressure filtration (belt filter press and recessed plate filter press), vacuum filtration, or centrifugation. The specific equipment used for mechanical treatment at the Alliance Refinery is a conventional recessed plate filter press. The deliquification step in the 1989 studies was performed by a contractor, Tracker, Inc., under BP's direct supervision.

During the operating cycle, oil and water are filtered out as solids accumulate in the plate chambers. As noted earlier, the filtrate is collected in a decant tank where oil and water are separated. The recovered oil is returned to the crude unit for reprocessing while the filtrate water is returned to the forebay of the API Separator for further treatment.

The major operational steps in the mechanical treatment operating cycle are feed conditioning, press charging, cake discharge, and equipment clean-up operations. The efficiency of the mechanical treatment operation, which is indirectly reflected in press charging time, is dependent on feed concentration of solids and oil, filtration admixtures, and feed temperature.

The operating principles of this equipment type are well known, including the use of deliquification aids to enhance process performance. A typical filter press operation for treating refinery waste requires a cycle time of between one and two hours, including feed conditioning and addition of deliquification aids, press charging, cake discharge, and equipment clean-up operations. The efficiency of this device, which is reflected in press charging time, is dependent on feed concentrations of solids and oil, feed temperature, and the type and amount of deliquification aids used. Typical deliquification aids are diatomaceous earth and lime, and the amounts used are typically one part deliquification aid to 0.5-1.0 part dry feed solids.

Solvent Extraction

The extractor installed at Alliance Refinery is designed to treat 13.6 metric tons/day (15 tpd) of deliquified cake material, based on 4 operating cycles per 16 hour shift. This capacity slightly exceeds the refinery's 13 ton daily production rate of mechanically treated material. Thus, this is a true "full-scale" unit.

The extraction process is designed to incorporate a sequence of up to three solvent contact periods or cycles. The first extraction cycle utilizes a light hydrocarbon solvent which removes bulk oil and volatiles from the sludge, leaving behind heavier hydrocarbons, tars, etc. The oil removed by the first solvent cycle has a wide boiling point distribution, with typically about 30 weight percent of the material boiling above 370° C (700° F). More than 90 percent of bulk oil removal is achieved in this first solvent extraction cycle. The thermodynamic characteristics of this light hydrocarbon solvent enable its efficient recovery from the residual oil under relatively mild temperature and pressure conditions.

Docket Number: LD12-00055 (continued)

Commenter: BP Research

Comment: (continued)

The second solvent cycle uses a heavy hydrocarbon solvent with a relatively narrow boiling range. This aromatic solvent is very efficient at removing the heavy hydrocarbon components left behind by the first solvent cycle. Due to the wide boiling point difference between the aromatic solvent and the heavy residual hydrocarbons, the aromatic solvent can also be effectively recovered for recycle.

The third solvent cycle again utilizes the light hydrocarbon solvent and serves to remove the residual aromatic solvent remaining from the previous extraction cycle. Note that in addition to the direct recovery of the solvents used in the process, all exhaust gases, (i.e. purge and pressure relief vents) are directed to the refinery flare system.

A two-cycle process was investigated during the 1989 demonstration. This two-cycle treatment approach is identical to the three-cycle approach described above, except the initial light solvent wash is omitted.

Solvent temperature as an operating variable, has a strong influence on the efficiency of the extraction process. Based on results from pilot and laboratory experiments, the percentage of oil extracted can vary by as much as 50 percent depending on operating temperature. It has been found that the optimal operating conditions for the process are approximately 110° F for the light hydrocarbon solvent cycles and approximately 200° F for the second solvent cycle. Because of this process sensitivity, solvent temperatures and flowrate must be controlled by means of on-line controls and must be closely monitored during the extraction process.

Improper handling and non-uniform loading of the extractor feed (filtered oily sludge) can also have a strong influence on extraction efficiency. For example, the rate of extraction is related to feed particle size, with 0.25 inch particles being the maximum size which can be extracted in reasonable solvent contact residence times. Thus, the extraction process unit, which specifies a progressive cavity pump for delivering filtered oily sludge to the extractor, includes a particle size reduction device to reduce the pump discharge material to small, uniformly-sized particles. These particles are fed into the closed extractor vessel and free-fall onto a rotating deflection plate distributor, which evenly distributes the sludge within the extraction vessel. The net effect of this handling and loading arrangement is an easily extracted bed of uniformly-sized, evenly distributed sludge particles.

Metals Fixation

The final step in the process is fixation of the metals in the deoiled solids residue. Fixation chemically stabilizes the metals in the solids residue, thus substantially reducing the leachability of metals, via addition of pozzolanic reagents. The product is a solid with very low leachate metals concentration as measured by the TCLP test.

Docket Number: LD12-00055 (continued)

Commenter: BP Research

Comment: (continued)

Deoiled solids slurry from the extractor is combined with a commercial lime/flyash mixture, portland cement and iron salt. After flash mixing, the combined slurry is dewatered in a conventional recessed chamber plate filter press. The product is a stable dry filter cake suitable for land disposal. The mixture filters very rapidly, requiring cycle times of one-half hour or less. The filtrate is collected and reused for slurrying solids from the extractor. The overall system is a net water-user, resulting in no routine wastewater generation.

The primary difference between the filter press operations for deliquification versus metals fixation are volumetric capacity and the type and amount of additives employed. The deoiled solids from the extractor dewater very easily and additive requirements on a mass-basis are about one-third that of deliquification since these are required solely for metals immobilization. Also, the deoiled solids filter rapidly, requiring cycle times of less than one-half hour. The filtrate from dewatering fixed deoiled solids can be collected and reused for slurrying solids from the extractor.

The accomplishment of metals fixation in the 1989 studies differs greatly from the method used in the 1988 work. In the earlier demonstration, a water-slurry of solvent extracted waste was mixed in a 55 gallon drum with the chemical fixation reagents. The mixture was then filtered using a pilot-scale filter press. In 1989 the fixation step has been fully integrated into the process. All of the extracted sludge slurry is directed into a mixing chamber and full-scale filtration equipment. Thus, there is no longer a "solvent extracted unfixed filter cake" generated as part of the process. BP did, however, generate small amounts of this material using small-scale equipment for TCLP comparisons and operational control information.

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

In Section III(B)(1)(b), comments were requested on current generation and management practices, including plans for treating and disposing of K048-K052 wastes, and quantities of K048-K052 wastes disposed.

BP Oil is an operator of five U.S. refineries and is, therefore, a generator of K048-K052 wastes. The large majority of K048-K052 wastes from these refineries is currently managed in land treatment units. The remainder is managed in landfills. After August 8, 1990, it is our expectation that much of our K048-K052 wastes will be managed in commercial incinerators. Land treatment is not expected to be an option because of inability to obtain "no migration" petitions.

Docket Number: LD12-00189

Commenter: E.I. DuPont De Nemours & Company

Comment:

In the "Third-Third" proposed rule, the Agency asks for information about the volumes of petroleum refinery sludges that may require solid/sludge incineration after August 1990.

Since 1984, Du Pont's Chambers Works plant, Deepwater, NJ has been treating K051 (API separator sludge) from the Exxon Bayway Refinery in Linden, New Jersey. Exxon ships approximately 6000 tons (1,440,000 gallons) of K051 to Chambers Works each year. Because Exxon Bayway has not been a TSDF since 1984, it was not included in the TSDR survey. It is unclear from the "Generator" survey information available in the "Third-Third" Docket whether Exxon Bayway was included.

Chambers Works will not be able to meet the treatment standards for K051 until some time in 1992 when thermal treatment of the Chambers Works primary sludge is operational. Therefore, Chambers Works will be unable to accept the Bayway K051 sludge for treatment after the August 1990 expiration of the current two-year national capacity variance. Exxon is actively pursuing contracts with hazardous waste incineration companies to treat the K051 after August 8, 1990.

Although the volume of K051 received from Bayway has been reported as part of Chambers Works' primary sludge, we believe that deletion of this waste stream would have only a negligible effect on the total volume of treatment residuals requiring solid/sludge incineration at Chambers Works. This is because Chambers Works' internal management practices limit acceptance of commercial wastes according to their volume of total solids to assure compliance with NPDES discharge limits. The Exxon K051 waste is a pumpable sludge and is comparatively high in solids. It now consumes a significant fraction of the total allocation for commercial wastes. When the Exxon wastes are no longer being treated, it is likely that other waste streams will be accepted such that the total output of solids residuals at Chambers Works will remain approximately the same.

Du Pont believes that it is appropriate for EPA to recognize the Exxon Bayway K051 wastes as an additional increment of petroleum refinery wastes requiring solid/sludge incineration after August 1990. EPA should not assume that the volume is accounted for with the Chambers Works sludges because the K051 sludges will require incineration even if a capacity variance applies to the Chambers Works sludges.

Docket Number: LD12-00230

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment:

Staff estimated that there are approximately 370,000 tons per year of hazardous waste generated by the petroleum industry. These wastes were reported using 56 different California Waste Codes and included organic and metal containing wastes and contaminated soils. Table 4, "*Petroleum Waste Inventory for 1986*", lists the 56 California Waste Codes and the associated quantities reported for 1986. Staff estimated that there was approximately 197,200 tons per year of organic hazardous waste generated, but was unable to distinguish the quantities of RCRA waste and non-RCRA waste.

WSPA estimated that approximately 42,058,600 tons per year of petroleum waste is generated by its members. These waste quantities included hazardous and non-hazardous waste and was not used by staff to quantify hazardous waste quantities from the industry. WSPA stated that most of their estimated waste quantities are not hazardous, but did not provide any supporting information.¹⁰ However, assuming that the oily waste quantities reported by WSPA was hazardous, staff estimated (in Table 7) that there was 61,400 tons per year of RCRA and 165,600 tons per year of non-RCRA hazardous waste. As a check, this estimate of 227,000 tons per year ($61,400 + 165,600$) is roughly equivalent to staff's estimated 197,200 tons per year.

Staff has estimated that 73,000 tons per year of organic containing hazardous petroleum waste results in approximately 14,600 tons of oil and organic compounds being land disposed. With the use of solvent extraction, approximately 14,050 tons per year of oil and organic compounds, and 36,500 tons per year of water could be removed from the waste and recycled. Some of the water could remain in the treated solids and aid in the fixation of the metals. The oil and organic compounds would be sent back into the refining process, while the reclaimed water could be reused. The amount of organic containing hazardous waste going to land disposal would be reduced from the 73,000 tons per year to dry solid of approximately 22,000 tons per year, and would only contain .50 tons of oil and organic compounds.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

In 1986, approximately one million tons of hazardous waste were land disposed in California, with the petroleum industry being one of the largest generators with approximately 370,000 tons per year of waste. Of those wastes quantities, approximately 73,000 tons per year are organic containing hazardous waste which are currently being land disposed by the petroleum industry. Surveys were sent to the petroleum industry to obtain additional information on the quantities of petroleum hazardous waste generated in California. WSPA responded with various reports and findings concerning their member's petroleum waste. These responses included an inventory of waste generated by its members (227,000 tons per year) which was comparable to staff's estimated quantity (197,200 tons per year) of organic containing hazardous waste.

Table 2 shows the quantities of waste generated by the petroleum industry as estimated by staff and by members of WSPA. Staff estimated quantities of petroleum waste using the 1986 Hazardous Waste Information System (HWIS) Data Base and the 1987 Facility and Generator Report Data base. The quantities which include both RCRA and *California Only* hazardous waste, were reported using 56 different California Waste Codes. WSPA surveyed its members in 1987 and estimated quantities of both hazardous and non-hazardous waste. As stated by WSPA, most of the estimated waste is considered non-hazardous by its members and were not manifested or reported in facility and generator reports.¹⁰ Staff estimates of contaminated soils are only those generated at the site of production and refining, and did not include contaminated soils from the clean-up of gasoline or transfer stations. Of the estimated 240,400 tons per year of organic hazardous waste, approximately 73,000 tons per year of organic containing petroleum hazardous waste is being land disposed and would be affected by the proposed treatment standards.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Table 2
**PETROLEUM WASTE
 SUMMARIES**
Estimated Tons Per Year

	<u>Hazardous Waste¹</u> (DHS Estimates)	<u>Total Waste Produced²</u> (WSPA Estimates)
Organic	240,400	167,000
Inorganic	96,200	41,885,500
Contaminated Soils	24,600	4,100
TOTAL =	371,200	42,058,600

- NOTES: 1. Derived by DHS staff using 1986 Manifests data and 1987 Facility/Generator Reports. All waste was assumed to be hazardous.
2. Evaluation of Alternative Technologies to Land Disposal for Oily Industrial Waste. WOGA, May 1987.
3. Includes both hazardous and non-hazardous as estimated by WOGA.

Figure 4, "1986 HAZARDOUS WASTE SUMMARY FOR THE PETROLEUM INDUSTRY", shows the hazardous waste quantities estimated by staff for refining and production (non-refining) processes as reported in 1986. Staff categorized the data, using California Waste Codes for identification, into waste types defined as: Miscellaneous Oily Waste; Oily Sludge; Tank/Still Bottoms; Other Organic Wastes; Halogenated Wastes; Miscellaneous Solvents, Organic Aqueous Solutions; and Miscellaneous Solutions/Solids/Sludges W/&W/O Metals. The waste types were used to summarize similar waste types so that staff could define oily waste quantities subject to the proposed treatment standard.

As shown, the combined Misc. Oily Waste, and Solutions, Solids, Sludges W/ & W/O Metals are the largest waste categories for the petroleum industry at 132,000 and 130,000 tons per year respectively. Following these are Oily Sludge, at 38,000 tons per year, Tank/Still Bottoms at 26,000 tons per year and Misc. Solvents & Organic Aq. Solutions at 30,700 tons per year.

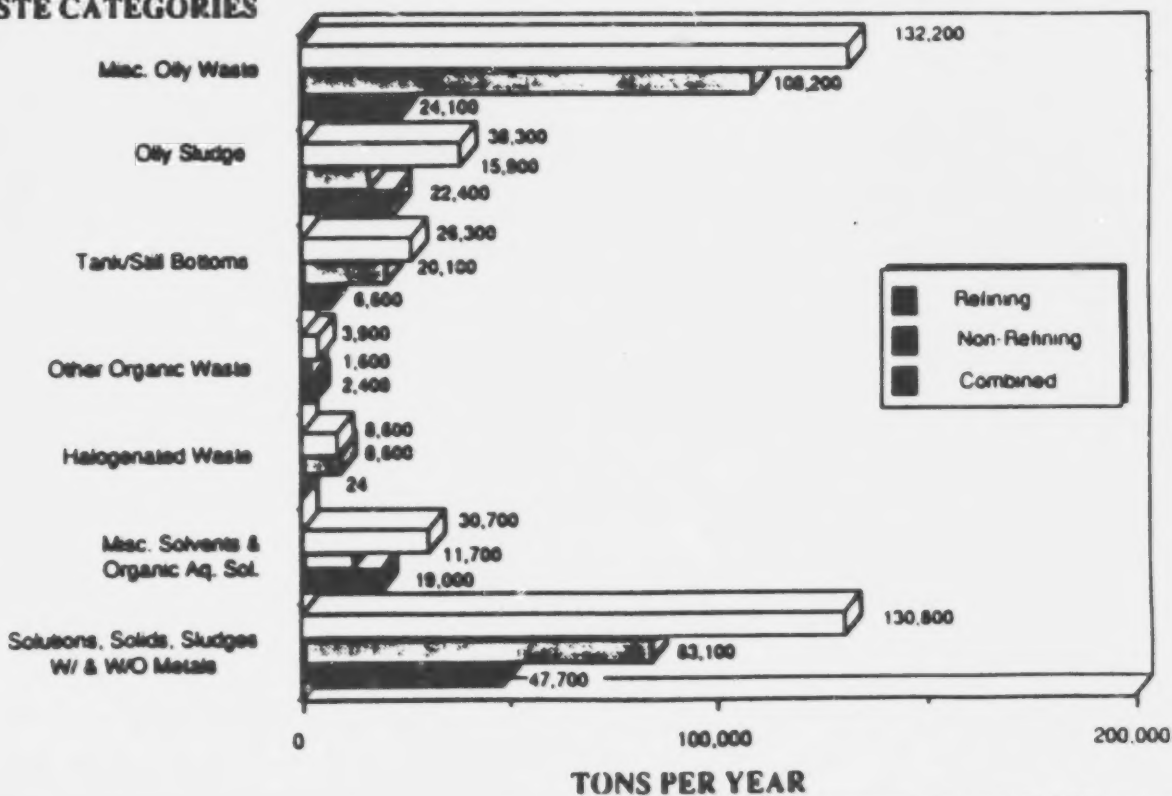
Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Figure 4
**1986 HAZARDOUS WASTE SUMMARY
FOR THE
PETROLEUM INDUSTRY**

WASTE CATEGORIES

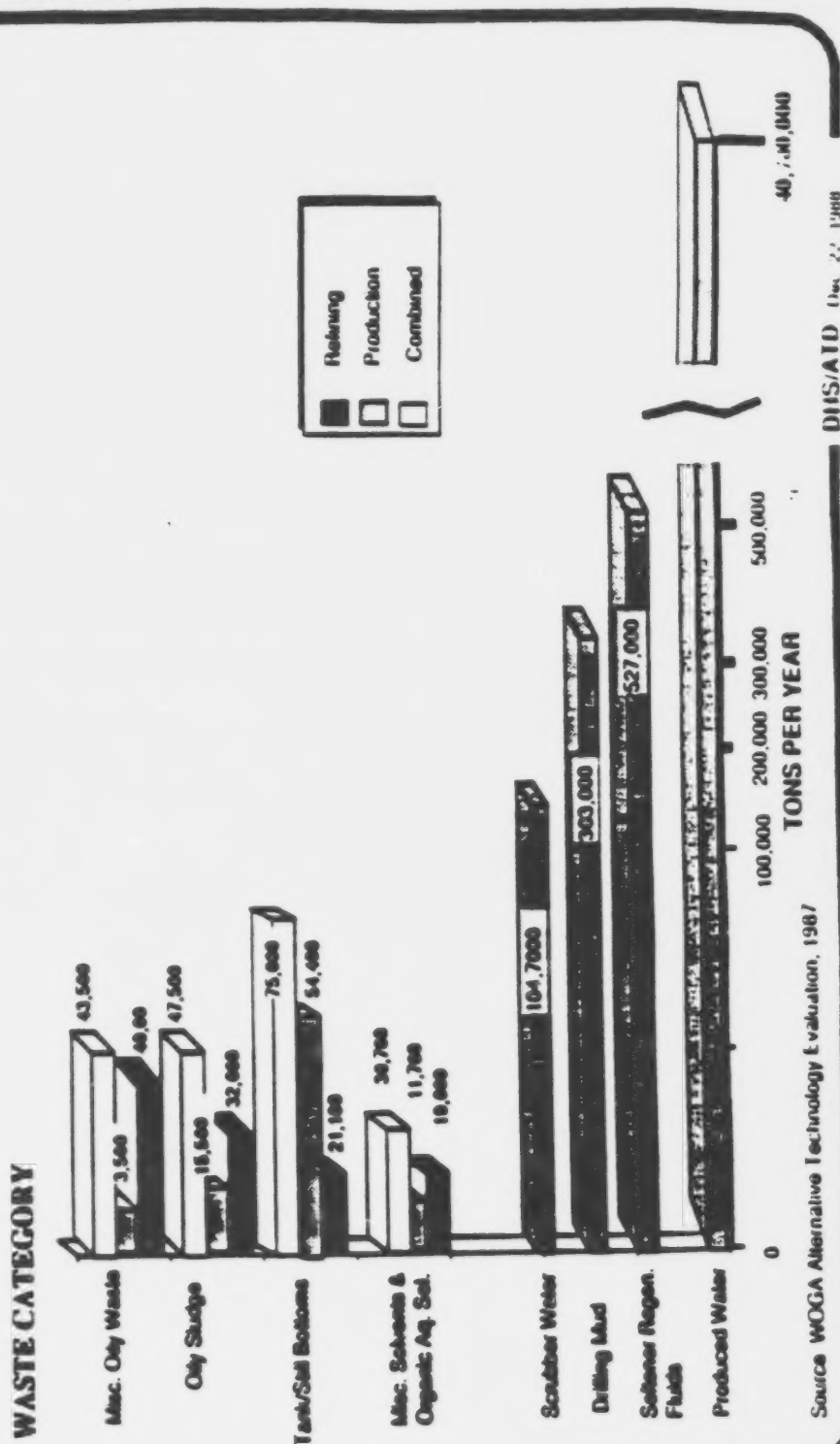


Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Figure 1
**WSI's WASTE SUMMARY
FOR THE
PETROLEUM INDUSTRY**



Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

The proposed treatment standard is for organic containing petroleum waste only. For the purpose of estimating quantities of organic containing waste, staff used waste quantities reported as California Waste Codes: 221, 222, 223, 241, 451, and 491. As noted before, these waste codes include both RCRA and *California Only* wastes, so quantities will reflect both RCRA and non-RCRA wastes. These wastes codes account for approximately 197,200 tons per year or approximately 53 percent of the total hazardous waste estimated by staff in Table 4 and Figure 4.

Table 8, "1986 Summaries of Petroleum Waste Subject to Standards", shows the quantities of waste reported as California Waste codes 221, 222, 223, 241, 451, and 491. California Waste Codes 221 accounts for the largest amount of oily waste reported at approximately 105,000 tons per year. 451-Degreasing Sludge is the lowest amount of oily waste reported at 73 tons per year. The total tonnage affected by the proposed treatment standard is approximately 197,000 tons per year. The quantities of non-RCRA waste is 144,195 tons per year of production waste plus an unknown portion of the 52,997 tons per year of refining waste. The refining waste is a mixture of RCRA and non-RCRA waste. The estimated quantities for the refining and production wastes in Table 8 compare very well with WSPA's estimates in Table 7.

Table 8
1986 SUMMARIES
PETROLEUM WASTE SUBJECT TO STANDARDS
(tons per year)

	Refining	Production	Combined
221 Waste Oil & Mixed Oil	1,802	103,346	105,148
222 Oil/Water Sludge	11,445	15,587	27,032
223 Unspecified Oil Waste	22,268	4,822	27,090
241 Tank Bottoms	6,568	20,133	26,701
451 Degreasing Sludge	73	(no data)	73
491 Unspecified Sludge	10,841	307	11,148
TOTALS	52,997	144,195	197,192

Source: Generated from Table 2 of this report.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

As noted before, staff's estimated quantities only include those waste which have been classified as hazardous waste by the generator. Since WSPA's 42,058,600 tons per year of petroleum waste generation is so large, and the actual amount being hazardous is unknown, staff estimates may not reflect the true quantities subject to the proposed treatment standard. Actual quantities that are hazardous depend on evaluation of the provisions of CCR, Title 22, Article 11 and H&SC Section 25117.

Table 16 is a summary of the waste management practices that staff found for organic containing petroleum hazardous waste. These methods are also shown graphical in figures 5 and 6. The shaded area in Table 16 represents the waste that would be affected by SB1500: Landfill, Surface Impoundments, and Land Application. This accounts for approximately 73,000 tons per year of waste and consists of both RCRA and California Only waste. Most of California Waste Codes 223, 241, and 491 are managed by land disposal, while much of the waste in Codes 221 and 222 are being recycled.

Table 16

WASTE MANAGEMENT PRACTICES
1986 PETROLEUM WASTE

Treatment Methods	1986 California Waste Codes (Tons per Year)						TOTALS
	221	222	223	241	481	491	
Recycle	73,195	13,534	623	956			90,298
Landfill	25	1,957	3,357	4,549	26		10,514
Surface Imp.	1,089	4,593	3,092	16,258	73	11,021	36,736
Land Applica.	40	2,545	18,960	3,218			25,363
Transfer Stat.	13,345	6	21				13,386
Other	9,974	3,084	333	42	31		13,474
Unknown	5,334	976	26	348	58		6,732
Miss.	93	343	79	100	12		634
TOTALS	105,115	27,048	27,111	26,679	73	11,148	197,157

Tons Per Year

> 72,633

Subject To
SB1500

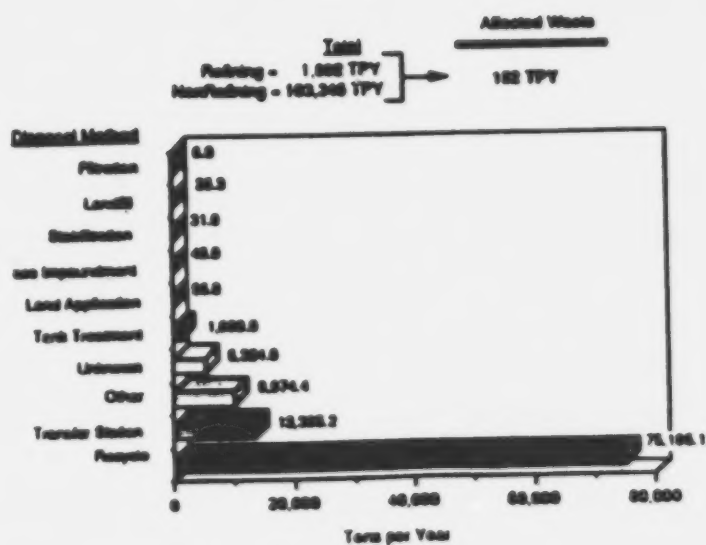
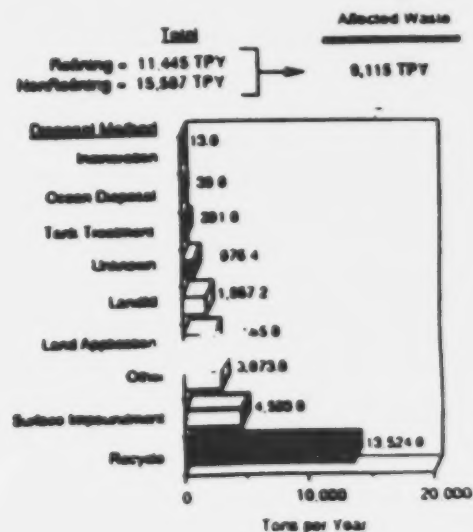
Source: 1987 Mamm. Department of Health Services: Alternative Technology Section

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Figure 8
**WASTE MANAGEMENT PRACTICES
1986 PETROLEUM WASTE**

221 WASTE OIL/MIXED OIL**222 OIL/WATER SLUDGE**

a. Figure derived from 1986 Hazardous Waste Information System

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Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

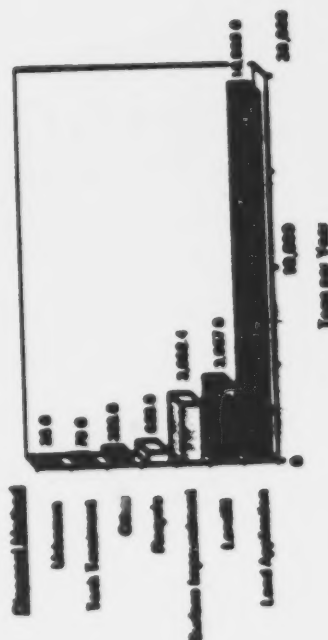
Figure 6

WASTE MANAGEMENT PRACTICES 1986 PETROLEUM WASTE

723 UNSPECIFIED OIL WASTE

Affected Waste

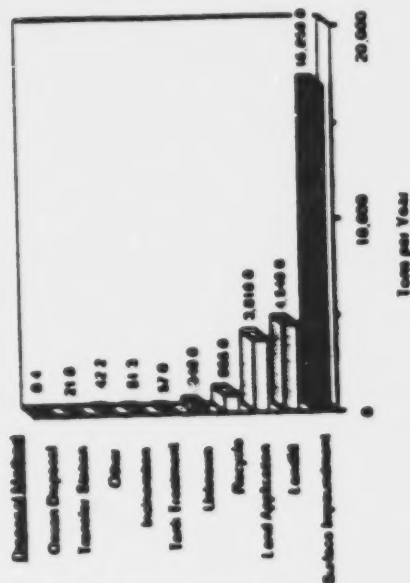
Refining - 32,360 TPY
Manufacturing - 4,000 TPY
Total - 36,360 TPY



241 TANK BOTTOM WASTE

Affected Waste

Refining - 6,560 TPY
Manufacturing - 20,147 TPY
Total - 26,707 TPY



Note: Figure derived from 1986 Hazardous Waste Information System

DISCARD JULY 21, 1988

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Approximately 75 percent or 75,200 tons per year of the California Waste Codes 221-Waste Oil & Mixed Oil, and 50 percent or 13,500 tons per year of waste code 222- Oil/Water Sludges are being recycled. This accounts for 46 percent of all petroleum waste in Table 12. California Waste Codes 223-Unspecified Oil Waste, 241-Tank Bottoms Waste, 451-Degreasing Sludge, and 491-Unspecified Sludge are being land disposed with very little recycling. Land disposal as a waste management practice accounts for approximately 96 percent for these four waste codes.

On-site land treatment of organic containing waste by the petroleum industry has been reduced in recent years. Table 17 shows the status of California on-site land treatment facilities as of December, 1987. In 1986, Chevron was the only company that reported on-site treatment of its waste. As shown in Table 18, Chevron reported that it land treated approximately 26,000 tons of petroleum waste in 1986. The majority of the waste, 18,900 tons of 223-Unspecified Oil Containing Waste was disposed of at the Richmond Refinery land treatment site.

Table 18
1986 ON-SITE DISPOSAL
OF
PETROLEUM WASTE

CML Waste Code	Tons of Waste at Chevron Disposal Sites						Total Tons
	El Segundo	Kern 3a	Kern 8a	Freese 23d	Kern 36a	Richmond	
136-unspecified oil, sol.	388						388
221-waste oil/mix		12	0				12
222-oil/water sludge		204	3				2,811
223-unsp. oil contain.	2,404						18,947
241-tank bottoms		1,481	2,872			18,947	4,344
521-drilling mud				21	0		42
611-contaminated soils				42	0	0	0
Total Tons	2,802	1,697	2,875	63	0	18,947	26,384

- Notes: 1. Summary of "ON-SITE Disposal of Hazardous Waste, Annual Summary for 1986", DHS/ATD.
2. Chevron is only Company reporting on-site disposal.
3. El Segundo Refinery Land treatment unit will close and be replaced by a Catalytic Unit.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

In 1987, staff sent a survey to the Petroleum Trade Associations requesting information on its petroleum hazardous waste in regards to complying with SB 509.¹⁸ WSPA responded in August of 1987 with a report prepared by Mintelhauser Corporation "Response to California Department of Health Services Questionnaire Survey on SB 509."

In its response, WSPA estimated the following quantities and oil content of their members waste streams.

Table 11

**WSPA SUMMARIES OF ITS MEMBERS
WASTE OIL CONTENT**

Production Waste		Refining Waste	
<u>Oil Content</u>	<u>Tons/Year</u>	<u>Oil Content</u>	<u>Tons/Year</u>
<15%	70,046 (95.2%)	≤15%	90,838 (97.2%)
>15%	3,503 (4.8%)	>15%	2,625 (2.8%)

Source: WSPA's "Response to California Department of Health Services Questionnaire Survey on SB 509," by Mintelhauser, August 1987.

As shown, only 4 percent of the waste contained organic contents above the 15 percent level. The remaining 96% of their waste would have organic contents below the 15 percent level. This is comparable to the API study, in that most of the waste generated has an organic content of less than 15 percent.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Table 13
WASTE MANAGEMENT PRACTICES
● PROFILE OF TWO REFINERIES ●

1986 WASTE FOR SHELL CO., MARTINEZ CA.							
Waste Code	Land Application	Surface Impoundments	Incineration	Yard Treatment	Recycle	Other	Unknown
130 Other Spent Solids 12 lb	0.2	0.0					
140 Other Spent, Agpt. or Surface Impoundment	117.0						0.0
150 Activated Carbon Wastes	40.0	14.0					0.0
160 Plant/Catalyst Catalyst	40.0						0.0
170 Other Spent Catalyst	11.0						0.0
180 Other Spent Catalyst	0.0						0.0
190 Other Spent Catalyst	0.0						0.0
200 Other Spent Catalyst	0.0						0.0
210 Other Spent Catalyst	0.0						0.0
220 Other Spent Catalyst	0.0						0.0
230 Other Spent Catalyst	0.0						0.0
240 Other Spent Catalyst	0.0						0.0
250 Other Spent Catalyst	0.0						0.0
260 Other Spent Catalyst	0.0						0.0
270 Other Spent Catalyst	0.0						0.0
280 Other Spent Catalyst	0.0						0.0
290 Other Spent Catalyst	0.0						0.0
300 Other Spent Catalyst	0.0						0.0
310 Other Spent Catalyst	0.0						0.0
320 Other Spent Catalyst	0.0						0.0
330 Other Spent Catalyst	0.0						0.0
340 Other Spent Catalyst	0.0						0.0
350 Other Spent Catalyst	0.0						0.0
360 Other Spent Catalyst	0.0						0.0
370 Other Spent Catalyst	0.0						0.0
380 Other Spent Catalyst	0.0						0.0
390 Other Spent Catalyst	0.0						0.0
400 Other Spent Catalyst	0.0						0.0
410 Other Spent Catalyst	0.0						0.0
420 Other Spent Catalyst	0.0						0.0
430 Other Spent Catalyst	0.0						0.0
440 Other Spent Catalyst	0.0						0.0
450 Other Spent Catalyst	0.0						0.0
460 Other Spent Catalyst	0.0						0.0
470 Other Spent Catalyst	0.0						0.0
480 Other Spent Catalyst	0.0						0.0
490 Other Spent Catalyst	0.0						0.0
500 Other Spent Catalyst	0.0						0.0
510 Other Spent Catalyst	0.0						0.0
520 Other Spent Catalyst	0.0						0.0
530 Other Spent Catalyst	0.0						0.0
540 Other Spent Catalyst	0.0						0.0
550 Other Spent Catalyst	0.0						0.0
560 Other Spent Catalyst	0.0						0.0
570 Other Spent Catalyst	0.0						0.0
580 Other Spent Catalyst	0.0						0.0
590 Other Spent Catalyst	0.0						0.0
600 Other Spent Catalyst	0.0						0.0
610 Other Spent Catalyst	0.0						0.0
620 Other Spent Catalyst	0.0						0.0
630 Other Spent Catalyst	0.0						0.0
640 Other Spent Catalyst	0.0						0.0
650 Other Spent Catalyst	0.0						0.0
660 Other Spent Catalyst	0.0						0.0
670 Other Spent Catalyst	0.0						0.0
680 Other Spent Catalyst	0.0						0.0
690 Other Spent Catalyst	0.0						0.0
700 Other Spent Catalyst	0.0						0.0
710 Other Spent Catalyst	0.0						0.0
720 Other Spent Catalyst	0.0						0.0
730 Other Spent Catalyst	0.0						0.0
740 Other Spent Catalyst	0.0						0.0
750 Other Spent Catalyst	0.0						0.0
760 Other Spent Catalyst	0.0						0.0
770 Other Spent Catalyst	0.0						0.0
780 Other Spent Catalyst	0.0						0.0
790 Other Spent Catalyst	0.0						0.0
800 Other Spent Catalyst	0.0						0.0
810 Other Spent Catalyst	0.0						0.0
820 Other Spent Catalyst	0.0						0.0
830 Other Spent Catalyst	0.0						0.0
840 Other Spent Catalyst	0.0						0.0
850 Other Spent Catalyst	0.0						0.0
860 Other Spent Catalyst	0.0						0.0
870 Other Spent Catalyst	0.0						0.0
880 Other Spent Catalyst	0.0						0.0
890 Other Spent Catalyst	0.0						0.0
900 Other Spent Catalyst	0.0						0.0
910 Other Spent Catalyst	0.0						0.0
920 Other Spent Catalyst	0.0						0.0
930 Other Spent Catalyst	0.0						0.0
940 Other Spent Catalyst	0.0						0.0
950 Other Spent Catalyst	0.0						0.0
960 Other Spent Catalyst	0.0						0.0
970 Other Spent Catalyst	0.0						0.0
980 Other Spent Catalyst	0.0						0.0
990 Other Spent Catalyst	0.0						0.0
TOTAL	1,311.2	2,311.0	1.0	42.0	3.0	200.1	204.0

1986 WASTE FOR Chevron, Richmond CA.							
Waste Code	Land Application	Surface Impoundments	Incineration	Yard Treatment	Recycle	Other	Unknown
130 Other Spent Solids 12 lb	0.2	0.0					
140 Other Spent, Agpt. or Surface Impoundment	117.0						0.0
150 Activated Carbon Wastes	40.0	14.0					0.0
160 Plant/Catalyst Catalyst	40.0						0.0
170 Other Spent Catalyst	11.0						0.0
180 Other Spent Catalyst	0.0						0.0
190 Other Spent Catalyst	0.0						0.0
200 Other Spent Catalyst	0.0						0.0
210 Other Spent Catalyst	0.0						0.0
220 Other Spent Catalyst	0.0						0.0
230 Other Spent Catalyst	0.0						0.0
240 Other Spent Catalyst	0.0						0.0
250 Other Spent Catalyst	0.0						0.0
260 Other Spent Catalyst	0.0						0.0
270 Other Spent Catalyst	0.0						0.0
280 Other Spent Catalyst	0.0						0.0
290 Other Spent Catalyst	0.0						0.0
300 Other Spent Catalyst	0.0						0.0
310 Other Spent Catalyst	0.0						0.0
320 Other Spent Catalyst	0.0						0.0
330 Other Spent Catalyst	0.0						0.0
340 Other Spent Catalyst	0.0						0.0
350 Other Spent Catalyst	0.0						0.0
360 Other Spent Catalyst	0.0						0.0
370 Other Spent Catalyst	0.0						0.0
380 Other Spent Catalyst	0.0						0.0
390 Other Spent Catalyst	0.0						0.0
400 Other Spent Catalyst	0.0						0.0
410 Other Spent Catalyst	0.0						0.0
420 Other Spent Catalyst	0.0						0.0
430 Other Spent Catalyst	0.0						0.0
440 Other Spent Catalyst	0.0						0.0
450 Other Spent Catalyst	0.0						0.0
460 Other Spent Catalyst	0.0						0.0
470 Other Spent Catalyst	0.0						0.0
480 Other Spent Catalyst	0.0						0.0
490 Other Spent Catalyst	0.0						0.0
500 Other Spent Catalyst	0.0						0.0
510 Other Spent Catalyst	0.0						0.0
520 Other Spent Catalyst	0.0						0.0
530 Other Spent Catalyst	0.0						0.0
540 Other Spent Catalyst	0.0						0.0
550 Other Spent Catalyst	0.0						0.0
560 Other Spent Catalyst	0.0						0.0
570 Other Spent Catalyst	0.0						0.0
580 Other Spent Catalyst	0.0						0.0
590 Other Spent Catalyst	0.0						0.0
600 Other Spent Catalyst	0.0						0.0
610 Other Spent Catalyst	0.0						0.0
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670 Other Spent Catalyst	0.0						0.0
680 Other Spent Catalyst	0.0						0.0
690 Other Spent Catalyst	0.0						0.0
700 Other Spent Catalyst	0.0						0.0
710 Other Spent Catalyst	0.0						0.0
720 Other Spent Catalyst	0.0						0.0
730 Other Spent Catalyst	0.0						0.0
740 Other Spent Catalyst	0.0						0.0
750 Other Spent Catalyst	0.0						0.0
760 Other Spent Catalyst	0.0						0.0
770 Other Spent Catalyst	0.0						0.0
780 Other Spent Catalyst	0.0						0.0
790 Other Spent Catalyst	0.0						0.0
800 Other Spent Catalyst	0.0						0.0
810 Other Spent Catalyst	0.0						0.0
820 Other Spent Catalyst	0.0						0.0
830 Other Spent Catalyst	0.0						0.0
840 Other Spent Catalyst	0.0						0.0
850 Other Spent Catalyst	0.0						0.0
860 Other Spent Catalyst	0.0						0.0
870 Other Spent Catalyst	0.0						0.0
880 Other Spent Catalyst	0.0						0.0
890 Other Spent Catalyst	0.0						0.0
900 Other Spent Catalyst	0.0						0.0
910 Other Spent Catalyst	0.0						0.0
920 Other Spent Catalyst	0.0						0.0
930 Other Spent Catalyst	0.0						0.0
940 Other Spent Catalyst	0.0						0.0
950 Other Spent Catalyst	0.0						0.0
960 Other Spent Catalyst	0.0						0.0
970 Other Spent Catalyst	0.0						0.0
980 Other Spent Catalyst	0.0						0.0
990 Other Spent Catalyst	0.0						0.0
TOTAL	1,311.2	2,311.0	1.0	42.0	3.0	200.1	204.0

NOTE: 1 Data comes from 1986 Generator and Facility Reports
2 Shaded area represents waste under subject to proposed Treatment Standards

UNITS: A/D

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Table 6
**PETROLEUM WASTE
 SUMMARIES**
 Estimated Tons Per Year

	<u>HAZARDOUS WASTE¹</u> (DHS Estimate)	<u>TOTAL WASTE PRODUCED^{2,3}</u> (WSPA Estimate)
Organic	240,400	167,000
Inorganic	96,200	41,885,500
Contaminated Soils	<u>34,600</u>	<u>5,100</u>
TOTAL =	371,200	42,058,600

NOTES: 1. Derived by DHS staff using 1986 manifest data and 1987 Facility/Generator Reports.

All data was assumed to be hazardous.

2. Evaluation of Alternative Technologies to Land Disposal for Oily Industrial Waste.
 WOGA, May 1987

3. Includes both hazardous and non hazardous wastes as estimated by WOGA.

Staff believes that by selecting solvent extraction (a technology that provides for recycling and source reduction) as the basis of the standard, it fulfills the intent of SB 509 to minimize the hazardous characteristics of the waste by using source reduction and recycling methods as a priority over destruction treatment technologies such as incineration. Staff has estimated that there are approximately 73,000 tons per year of organic containing petroleum hazardous waste containing approximately 14,600 tons of oil and organic compounds being land disposed. With the use of solvent extraction, or other technologies, approximately 14,450 tons per year of oil and organic's compounds along with approximately 36,500 tons per year of water could be removed from the waste and recycled. The amount of organic waste going to land disposal would be reduced from the 73,000 tons per year to a dry solid of approximately 22,000 tons per year, and would only contain 150 tons of oil and organics. The oil and organics would be recycled as feedstock for the refineries and the water either reused or discharged into a Public Owned Treatment Works (POTW), or directly into National Pollutant Discharge Elimination System (NPDES) permitted surface waters, or used as an aid to the fixation of the metals in the treated solids..

Comment: (continued)

Table 4
PETROLEUM WASTE INVENTORY FOR 1986

1999 CALIFORNIA WASTE CODES Tons per Year	Refining	Non-Refining	Combined
201 Acid Waste	1,805	163,348	165,153
202 Other Acid Waste	29,202	4,922	34,124
Total a.	31,007	168,270	199,277
210 Organic Solvents	11,742	14,863	26,605
211 Organic Solvents	72	73	145
212 Organic Solvents	19,811	267	20,078
Total a.	31,625	14,933	46,558
220 Inorganic Solvents	4,100	26,125	30,225
221 Inorganic Solvents	4	14	18
222 Inorganic Solvents	4,096	26,111	30,207
Total a.	4,100	26,139	30,239
230 Organic Sludges	4,280	3,126	7,406
231 Organic Sludges	7,200	2,263	9,463
232 Organic Sludges	4	12	16
233 Organic Sludges	4	0	4
234 Organic Sludges	4	0	4
235 Organic Sludges	4	0	4
236 Organic Sludges	4	0	4
237 Organic Sludges	4	0	4
238 Organic Sludges	4	0	4
239 Organic Sludges	4	0	4
240 Organic Sludges	4	0	4
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GRAND TOTAL
(117)

Plotting

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

Implementing the proposed treatment standard would result in a large reduction of total tonnage of organic containing petroleum waste going to land disposal, while greatly reducing to a large extent the hazardous organic constituent of the waste. Assuming that there is currently 73,000 tons per year of organic containing petroleum waste going to land disposal, solvent extraction would reduce the total waste going to land disposal to approximately 22,000 tons per year. The amount of organics going to land disposal would be reduced from 14,600 tons per year to approximately 150 tons per year, while the 36,500 tons per year of water could be completely recycled. Although some of the water may be left in the treated solids to aid in the fixation of the metals. The recovered 14,450 tons of organics would be recycled, and the recovered water could be recycled or disposed in approved POTW's or NPDES permitted surface wastewaters. These numbers assume that the average organic containing petroleum waste has a oil content of 20 percent, a water content of 50 percent and a solids content of 30 percent, and treated solids with an oil and grease content measured on a dry basis of 0.70 percent (assumes standard is based upon EPA's statistical Method)

Table 32
ESTIMATED RESULTS
OF IMPLEMENTING
PROPOSED PETROLEUM TREATMENT STANDARDS

Untreated Waste (assumes)		Solvent Extracted Treated Waste (assumes)	
73,000	x 20% oil = 14,600 Tons/Year	150 Tons/Year	0.70% O&G (dry basis)
"	x 50% water = 36,500 Tons/Year	0% Water	
"	x 30% solids = 21,900 Tons/Year	21,900 Tons/Year	99.3% Solids

Total Treated Solids = 22,050 Tons/Year

Currently, Chevron USA is the only company reporting on site treatment. In 1986, they reported 26,400 tons of oily waste being managed in their land treatment units.

Docket Number: LD12-00230 (continued)

Commenter: CF Systems Corporation (California Dept. of Health Services)

Comment: (continued)

According to one manufacturer of solvent extraction equipment, they could deliver enough systems within one year to treat all 73,000 tons per year of organic containing petroleum hazardous waste²¹. This assumption is based on their ability to manufacture 16-24 units per year. They have the ability to build various size units, 1,000 barrel-per-day (bbl/day) units down to 200 bbl/day units. Each 1,000 bbl/day unit could treat 66,000 tons per year (based on 5 barrel per ton for 330 day per year) of organic waste. Two regional 1,000 bbl/day units, one located in southern California, the other in northern California, could be built and operating within one year and would be capable of treating all of the 73,000 tons per year of organic hazardous waste. The 73,000 tons per year of waste could also be treated with approximately 10 units with 200 bbl/day (40 tons per day) capacities while being operated as transportable recycling units. These transportable units could go from generator to generator and recycle the waste onsite. The units would be exempt from hazardous waste permits under H&SC 25143.2 if operated as onsite recycling units treating non-RCRA waste. These units may also be exempt from RCRA permitting due to the recycling regulations in 40 CFR.

Staff does not have information on the availability of treatment units from the other manufacturers of solvent extraction units. However, it appears that just one manufacturer has the capacity to treat within one year all of the California organic containing hazardous waste from the petroleum industry.

Currently there are some refineries such as Shell, Unocal, Mobil, and Chevron that either have delayed cokers being used to recycle organic containing petroleum waste or are investigating the use of them. At this time only one company has decided to obtain recycling equipment to treat its RCRA K048 thru K052 petroleum waste. Chevron's El Segundo refinery has contracted with a company to use its Thermal Separator. The equipment should be on site sometime in the first quarter of 1990 to begin operation in order to meet the EPA deadline for the RCRA treatment standards.

The Department has also learned that the Chevron El Segundo refinery has contracted with Thermal Dynamics Inc. to use their thermal extraction technology to meet the Federal EPA treatment standards.

11.3 Capacity Is Unavailable For Treatment Of K048-K052 Incineration Residues Due To The Proposed Treatment Standard

Summary:

Amoco Corporation (L020) submitted data documenting its attempt to locate treatment capacity for its K048-K052 incineration residues. Amoco Corporation stated that the proposed treatment standard for metals was unachievable and was precluding treatment facilities from accepting these wastes.

Response:

EPA acknowledges this comment and has revised the treatment standard in the final rule. This revision to the treatment standard is expected to alleviate any concern regarding capacity shortfalls for treatment of these K048-K052 residues.

Comments:

The comment relevant to this issue is presented as follows:

- Amoco Corporation (L020).

Docket Number: LD12-L0020

Commenter: Amoco Corporation

Comment:

K048 - K052 Listed Hazardous Wastes

As stated in previous comments on the third third land disposal restriction proposal, Amoco is concerned that the proposed standards for K048-K052 wastes cannot be met by currently available technology. Further, Amoco is concerned that generators of these wastes will not have sufficient time to comply with the regulations by August 1990

even if the Agency sets achievable standards in May. We request that the Agency consider the diligent, although futile, efforts that generators have made to come into compliance by August in setting achievable standards and in providing adequate time for facilities to comply. We understand that the American Petroleum Institute (API) will discuss these issues with Agency personnel in the near future.

In the interest of providing the Agency with a more complete understanding of generators' efforts, we are supplying background information for the data submitted by Amoco on December 20. These efforts began with attempts by Amoco's R&D department to duplicate the results obtained by EPA and used as a basis for setting the standards. A description of Amoco R&D's work, and the complete data base developed, are included in Attachment II. R&D personnel communicated extensively with the person who had conducted EPA's tests in Vicksburg to identify variables which might be important in duplicating the results when initial efforts were unsuccessful in meeting the standards. Some of the variables, such as the use of deionized distilled water, did not reflect realistic full-scale conditions, but were nonetheless used to duplicate the Vicksburg tests. Again, none of the fixation tests were successful in meeting the standards.

Amoco's engineering department also worked with the facility and R&D to identify commercial vendors of fixation technology who might be able to meet the standards, and who were capable of supplying fixation capacity by the compliance deadline. Attachment II contains a list of the vendors considered, and provides a description of the methodology used to select vendors for participation in a testing program. It also includes the reports we received from those vendors. Finally, it includes data from the independent laboratory which was used to verify analytical results reported by the vendors themselves.

Although Amoco had requested only data for the four regulated metals, we have approached the laboratories since the December 20 submission to obtain data on any additional constituents in the fixed residues. We are submitting this additional data to the Agency in the interest of supplying as much information as Amoco has been able to collect in the short time frame available, as a further demonstration of Amoco's commitment to work with the Agency in developing achievable standards.

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

As the Agency considers setting revised standards for metals, Amoco strongly encourages the Agency to remember that these data, and the data collected by the Agency, all result from bench-scale tests. The ability of fixation technology to meet these levels on a full scale operation has not been demonstrated. These tests also do not reflect the variability of wastes among the industry, or even the variation which can be expected over time at this one refinery. This issue may be particularly important for wastes which were generated some time ago, but which will become subject to the land disposal restriction as a result of cleanup operations. Wastes generated today can be expected to contain significantly less chromium, for example, as a result of its decreased use as a water treatment chemical in refineries. Therefore, treatment for chromium may be much more difficult for previously generated wastes. To reiterate our previous

comments, we encourage the Agency to set standards which can be reached through diligent efforts by industry to comply.

Amoco also strongly encourages the Agency to reevaluate the benefits of fixation for these residues before setting standards based on this technology. As part of the work conducted by Amoco R&D presented in Attachment II is an evaluation of the effects of dilution. By comparing the results of the leachable metals to the level which would be expected on the basis of dilution alone (mathematical combination of leachable levels in the binder and unfixed material), it was found that most reductions in leachable concentrations resulted from dilution. In fact, often the "percent fixed" was found to be negative. We believe that this is related to the fact that the levels of leachable metals in the unfixed residue are often relatively low, even in comparison with that in the fixation agents themselves. We could not perform similar calculations on the vendor processes because they consider the makeup of their fixation agents to be proprietary.

Strong evidence indicates that the primary effect of "fixing" these residues is dilution. The Agency has a longstanding policy against requiring a generator to dilute hazardous wastes. Requiring fixation would be entirely inconsistent with this policy. Fixation significantly increases the volume of material for eventual disposal as well. Requiring the dilution of these residues with fixation agents prior to disposal will result in a more rapid depletion of available hazardous waste landfill space. Amoco encourages EPA to ensure that required treatment is truly beneficial.

Amoco is pleased to provide this added information to EPA. We are available to answer any questions you may have regarding these comments.

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

Amoco Oil Company is currently reviewing companies that offer chemical fixation technology in order to meet the impending new Resource Conservation and Recovery Act (RCRA) Best Developed and Available Technology (BDAT) leachable metal levels on several solid wastes from our Whiting, Indiana refinery. This letter is to investigate your firms' experience in this area and to determine if mutual interest exists in conducting a treatability study.

The solid waste streams in question are listed in the Attachment in Table I. Yearly average generation rates and the waste characteristics are also listed in Table II. The Incinerator Wet Scrubber Solids (IWSS) and the Fluidized Bed Incinerator (FBI) Ash are the solid products from a fluidized bed incinerator. They are classified as K048-K051 hazardous wastes because they are the product of the incineration of these listed wastes. The IWSS and FBI Ash currently exceed the future BDAT standards for Arsenic, Selenium, Nickel, and Chromium. The total metals and TCLP test levels for these untreated wastes are given in Table III. The new BDAT standards must be met by August 8, 1990 if these wastes are to be disposed of in a landfill. The future BDAT metals limits for these streams are determined using the TCLP test and are also listed in Table III.

Two refinery solid wastes from a product treating facility are classified as hazardous due to their leachable lead content. These wastes are the spent Bender catalyst and spent Bender treating clay. The yearly average generation rates and the waste characteristics are listed in Table II in the Attachment. These solids are classified as characteristic hazardous wastes, and must be treated to meet as yet undefined standards by May 8, 1990 in order to dispose of them in a landfill. At this time we believe that the treatment standard will be the characteristic level, an EP Tox leachate test level of 5 mg/L lead. The total lead and EP Tox leachate test concentration of lead in the raw wastes are listed in Table IV.

At present, chemical fixation appears to be the most feasible method for meeting the new RCRA leachable metals standards. However, the K048-K051 waste limits are quite stringent. If your company is interested in the possibility of treating and disposing of these solid wastes, we request that you demonstrate your ability to treat them to the future BDAT levels. Such a demonstration might include a description of similar wastes that you currently treat to comparable standards, or any other refiners' K048-K051 wastes that you plan to process to the BDAT limits next year. It is anticipated that treating the Bender wastes to the leachable lead limit will not be a problem.

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

The chemical fixation vendors selected to provide treatability studies on the Whiting hazardous wastes (incinerator wet scrubber solids, FBI ash, Bender catalyst and Bender clay), were chosen based on past experience with the vendor, and the quality of their response to a letter of inquiry on the subject. The Whiting wastes are currently sent to the Chemical Waste Management's (CWM) CID site. CWM is one of the leaders in the field, and had provided quality work, so they were chosen to participate in the treatability study phase of this project. CHEMFIX had also demonstrated to Whiting that they had considerable expertise in the area of fixation, and so they were asked to do a treatability study.

Selection of the remaining two vendors resulted from an extensive survey of the industry. A letter of inquiry was sent out to the 27 vendors listed in the attachment (see July 26, 1989 memorandum from Erich Teske for more information). Sixteen of these vendors felt they could treat the Whiting wastes, the eleven other vendors did not respond. None of the vendors contacted had experience reaching levels as low as the SDAT limits.

As a result of this survey USPCI and ENRECO were chosen to conduct treatability studies. USPCI stated that they were treating another major oil company's K0-48 to 51 wastes, and they could provide either on-site treatment at Whiting, or off-site treatment and disposal in Oklahoma. ENRECO's response presented an impressive picture of their experience and capabilities. In addition, they had previously worked with AMOCO Oil at the Destrehan remediation site and had demonstrated their abilities. The remaining 14 vendors were not asked for further work because either they were unable to provide documentation or references on similar materials, they only could supply huge mobile units not suitable for our applications, or their location and costs were prohibitive. Four treatability studies with quality vendors were commissioned, and at the time, this was believed to be adequate. Further information on the vendor selection process can be found in an October 23, 1989 memorandum by Erich Teske titled "Chemical Fixation Vendor Summary and Additional Treatability Studies, Project 4W-7103".

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

Chemical Fixation Vendor Inquiry List

<u>Vendor</u>	<u>Location</u>	<u>Affirmative Response</u>
Envirite	Harvey, IL	YES
QualTec, Inc.	Huntsville, AL	YES
Peoria Waste Disposal	Peoria, IL	YES
Harmon Environmental	Plymouth Meeting, PA	YES
Rollins Environmental	Baton Rouge, LA	YES
CECOS International	Cincinnati, OH	YES
Hazcon, Inc.	Brookshire, TX	YES
SRS	Irvine, CA	NO
Mineral By-Products	Marietta, GA	NO
SolidTek Systems, Inc.	Morrow, GA	NO
Ash Management Systems	Houston, TX	NO
ATW-Caldwell	Santa Fe Springs, CA	NO
ENRECO	Amarillo, TX	YES
Ensotech, Inc.	North Hollywood, CA	NO
Gulf States Minerals	Laporte, TX	NO
Lopat Enterprises	Wanamassa, NJ	YES
MPF Services, Inc.	Huntington Beach, CA	YES
National D & P Corp.	Folcroft, PA	NO
Res. Recovery of America	Lakeland, FL	NO
Ultimate Source	San Antonio, TX	YES
Velsicol Chemical Corp.	Memphis, TN	NO
World Wide Waste Treatment	Whitehall, MI	NO
American Colloid Company	Arlington Heights, IL	YES
USPCI	Riverside, MO	YES
Heritage Env Services	Indianapolis, IN	YES
Enviroguard	Houston, TX	YES
Envirosafe	Cincinnati, OH	YES

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

Chemical Fixation Vendor Inquiry Letter
Whiting Disposal of Hazardous Waste, Project 4W-7103

In an effort to identify any chemical fixation vendors that might have the capability of treating the IWSS and FBI Ash to the future stringent SDAT standards, the attached letter was sent to the following firms:

Company Name	Location	Contact
Enviroite	Harvey, IL	Doug Newman
QualTEC, Inc.	Huntsville, AL	Pete Drake
Peoria Waste Disposal	Peoria, IL	Shella Moran
Hammon Environmental	Plymouth Meeting, Pa	Frank Friday
Rollins Environmental	Baton Rouge, La	Curtis Maybry
CECOS International	Cincinnati, OH	Todd Balzer
Hazcon, Inc.	Brookshire, TX	Roy Punderburk
SRS	Irvine, Ca	Joseph DeFranco
Mineral By-Products	Marietta, Ga	_____
SolidTek Systems, Inc.	Morrow, Ga	_____
Ash Management Systems	Houston, TX	Dale McKenzie
ATW-Caldwell	Santa Fe Springs, Ca	John Royle
Enreco	Amarillo, TX	Tom DeGrood
Ensotech, Inc.	North Hollywood, Ca	Doug Smith
Gulf States Materials	Laporte, TX	Dale Junghans
Int. Waste Tech.	Wichita, KS	Jeff Newton
Lopat Enterprises	Wanamassa, NJ	Lewis Flax
MPF Services, Inc.	Huntington Beach, Ca	Joe Mathewson
National D & P Corp.	Folcroft, Pa	Guy Petroski
Res. Recovery of America	Lakeland, FL	Robert Kincart
SGG Waste Management	Houston, TX	Roy Rieber
Ultimate Source	San Antonio, TX	William Shepard
United Resource Recovery	Houston, TX	Dave Stang
Velsicol Chemical Corp	Memphis, TN	Charles Hanson
Westinghouse Hitman	Columbia, MD	Robert Conner
World Wide Waste Treat.	Whitehall, Mich	Calvin Blystra

If any of the responses show promise, a treatability study may be initiated with one or more of the firms. A treatability study is already underway with Chemical Waste Management, and a study is currently being initiated with Chemfix.

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)

Petrolite Corporation

388 Marquette Avenue
St. Louis, Missouri 63118
314/968-8033 • FAX 314/968-8104

T. J. Reblinhaus
Director of Environmental Affairs

2 February 1990

Ms. C. M. Muraoka
AMOCO OIL COMPANY
P.O. Box 710 Mail Code 242
Whiting, IN 46394

Dear Ms. Muraoka:

In your letter of January 19 you requested information from Petrolite on the feasibility of recycling lead from Bender catalyst by "thermal recovery." As you know, Petrolite has reasons for concern with the treatment of lead wastes as proposed in the "Land Disposal Restrictions For Third Schedule Wastes." The effect of the rule on Bender catalyst residues and spent catalyst could be significant.

Bender catalyst wastes are classified as FF Toxic (D008) as a result of extraction of lead. The wastes may sometimes contain more than 2.5 percent lead, thereby mandating thermal recovery under the proposed rule. To date we have not identified a facility which can handle hazardous wastes and thermally recover lead from the matrix of Bender catalyst.

Our contacts with a lead processor and with hazardous waste operators, lead us to believe that thermal recovery of lead from Bender catalyst may require a significantly different process from the one evaluated by EPA. Petrolite believes that the composition of Bender catalyst, which contains lead oxide cemented to a metal slag base, will not produce recyclable lead when subjected to thermal recovery as proposed by the Agency. Thus far, attempts to reach persons in EPA to discuss the matter have been unsuccessful. Meanwhile, discussion of stabilization of Bender catalyst wastes with Rollins Environmental Services indicates that such a process could be successful. We have not yet tested this process.

I hope that the above information is helpful to you. Petrolite intends to continue work on this matter and, hopefully, can be of some assistance to Amoco in the near future.

11-50

K048-K052 Wastes

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)



DATE: September 18, 1989

TO: Dick Rosenberg

FROM: Jesse Conner/Woody Cotton

SUBJECT: Customer: AMOCO OIL CO., WHITING, IN REFINERY

CVM Contact: Susan Griggs

Project No.: 132

Sample No.: 89014035 Spent jet fuel treating clay

89014036 Fluid bed incinerator ash

89015076 Incinerator wet scrubber solids

CVM (R&D) Authorization No.: 114

Enclosed are the Stabilization Treatability Study Reports for the subject project. Three waste streams were tested for the purposes described below:

WASTE

PURPOSE OF TREATMENT

Fluid bed incinerator ash

Meet K048-K052 landban leaching standards

Incinerator wet scrubber solids

Meet K048-K052 landban leaching standards

Spent jet fuel treating clay

Reduce lead leaching to EPT characteristic standards

It was understood when the project was initiated that our Practical Quantitation Limit (PQL) for arsenic is above the K048-K052 landban standard imposed by EPA - 0.01 mg/l PQL versus 0.004 mg/l.

11-51

K048-K052 Wastes

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)



October 3, 1989

Mr. Eric H. Teske
AMOCO OIL COMPANY
P.O. Box 710
Whiting, Indiana 46394

Dear Eric:

Please find attached the reports on each of the waste samples that you sent us. The three reports cover: Treating Clay, FBI ash and FBI scrubber sludge. You will see that in each case we meet the treatment standards. In the case of the Treating Clay, a D008 waste, the lead leachate number was below 0.025 mg or ppm. With regards to the FBI ash and FBI scrubber sludge, we meet the Demonstrated Available Technology (BDAT) treatment standards for the analytes of concern: Arsenic, chromium, nickel and selenium. We reduced the leachate level of the Arsenic to less than 5 parts per billion which is the practical quantity limit for the test procedure with 3 parts per billion the minimum quantity limit. This represented over a 99% reduction in the leachability of Arsenic when compared to the leachable Arsenic in the raw untreated waste.

The following laboratory codes will help you understand the lab reports:

FBSI-1 represents the best result obtained to date on the FBI scrubber solids.
FBI-1 represents the best result obtained to date on the FBI ash.
AMO-2TC-1 represents the best result obtained to date on the Treating Clay.

I look forward to receiving your updated volume of waste generation report, including the bender catalyst that we studied in 1988. Following this report I will get with you and our operations/engineering department to see what makes practical sense in approaching the on-site treatment of your waste streams. We can also re-take up the point of delisting the FBI/FBI scrubber solids waste streams.

Sincerely,

Phil N. Baldwin, Jr.
Manager, Business and Technology Development

Docket Number: LD12-L0020 (continued)

Commenter: Amoco Corporation

Comment: (continued)



December 21, 1989

Claire M. Muraoka
Amoco Oil Company
2815 Indianapolis Blvd.
Whiting, Indiana 46394

Dear Claire Muraoka,

This letter is in response to the treatability study requested by Amoco Oil Company for new proposed treatment standards of leachable standards. This test was performed on the Incinerator Wet Scrubber Solid and FBI Ash samples provided to Lone Mountain.

Chemical Fixation procedures were performed in accordance with 40CFR 268 Appendix I. This procedure was performed in order to develop a recipe to meet proposed BDAT standards for the EPA's final rule.

Development of fixation recipe:

1. A 100 grams of each sample was taken and placed into a 600ml beaker.
2. 50ml of tap water was added to each beaker and mixed to a slurry.
3. Flyash, or a mixture of flyash and lime was mixed into the slurry to solidify it.
4. The samples were dried at ambient temperature for approximately 72 hours.

Pre-treatment and post-treatment TCLP analysis are attached and analytical results were performed by Gymnurs Laboratories, 1601 N. Glenville, Suite 105, Richardson, Texas 75081, (214)-690-9431.

In addition to the TCLP analysis, the sample was also analyzed for the organics and total cyanide treatment standards associated with the K048-K051 on the CCW Table. As you will see from the attached analysis, the results will indicate that the attempts at passing treatment standards have failed.

CHAPTER 12

DEEPWELL INJECTED WASTES

EPA received fifty-one capacity related comments concerning deepwell injected wastes. Requests were made for additional variances for the nonwastewater forms of four wastes due to evidence that these wastes, under the EPA definition of "nonwastewaters", were being injected. Other variances were requested to allow time to develop treatment capable of meeting the standards for particular wastes. EPA received additional variance requests as a result of alleged inadequate available treatment capacity, difficulty in isolating wastes for treatment, the inability of BDAT technology to treat the waste, and for EPA's omission of a deepwell injected waste.

Other comments were received supporting particular variances, disagreeing with particular variances, asserting that waste volumes were underestimated by EPA, requesting approval for case-by-case extension petitions or no-migration petitions, informing EPA that no-migration petitions had been approved, and questioning EPA's assumptions concerning wastes not believed to be deepwell injected. Finally, miscellaneous comments were received referring to data submittals, requesting clarification in the preamble, and discussing capacity utilization priorities. These issues are outlined in greater detail below:

- D002 nonwastewaters are deepwell injected;
- D003 (reactive cyanide) nonwastewaters are deepwell injected;
- D007 nonwastewaters are deepwell injected;
- K014 nonwastewaters are deepwell injected;
- A variance is needed for D002 wastes of pH less than 2.0;
- Difficulty in isolating P and U wastes for treatment by the effective date necessitates a variance;
- The methodology for determining P and U volumes was flawed resulting in artificially low estimates that did not reflect the real need for a capacity variance;
- Support for the D002, D003, D007, and K011/K013/K014 deepwell injection wastewater variances;

- Treatment capacity for deepwell injected D004 (EP toxic for arsenic) wastewaters;
- Capacity is unavailable for certain deepwell injected D010 (EP toxic for selenium) wastewaters since proposed treatment cannot meet the standard;
- U115 (ethylene oxide) wastewaters are deepwell injected and require a variance;
- Disagreement with D002 and D003 wastewater deepwell injection variances;
- No-migration petitions for UIC facilities and Third Third effective ban Dates;
- Scrubber water blowdown water cannot meet the standards and requires either of two possible variance scenarios, a separate treatability group, or a no-migration petition;
- EPA's assumption that F025, U077, and U078 wastewaters and nonwastewaters are not deepwell injected is questionable;
- Proposed standard for D002 wastewaters will result in poor utilization of surface disposal capacity;
- Additional data submissions on deepwell injected volumes; and
- Clarification of Table III.B.2(b) in the capacity preamble.

12.1 D002 Nonwastewaters Are Deepwell Injected**Summary:**

American Cyanamid Company (087) expressed to EPA that D002 nonwastewaters are currently being deepwell injected and submitted data supporting this claim. However, the deepwell injection section of the preamble made no indication that D002 nonwastewaters were included in the capacity variance extended to D002 wastewaters. American Cyanamid requested a reevaluation of the capacity analysis and suggested that the capacity variance be extended to both wastewater and nonwastewater forms of D002. The Hazardous Waste Treatment Council (HWTC) (L247) disagreed with American Cyanamid, stating that the volume of available treatment in Table III-B.1(c) along with the volume of available treatment in Table III-B.2(c) totaled more than enough capacity to handle the 42 million gallons of D002 nonwastewaters injected by American Cyanamid.

Response:

EPA has reviewed its analysis of D002 wastes and agrees with American Cyanamid that D002 nonwastewaters are deepwell injected. EPA has data on injection of D002 at American Cyanamid and upon reanalysis, has determined that this waste is indeed a nonwastewater. EPA disagrees with the Hazardous Waste Treatment Council (HWTC) that enough treatment capacity exists for the volume of deepwell injected D002 waste. First, HWTC has incorrectly determined available capacity. For the capacity analysis, EPA first assigns surface disposed waste volumes to their BDAT technologies (Table III-B.1(c)). The volume of available treatment capacity remaining following allocation of surface disposed wastes is assigned to the deepwell injected wastes (Table III-B.2(c)). By adding together the volumes of available treatment capacity from these two tables, the HWTC is "double-counting" a portion of the same available treatment capacity volume. While there may be sufficient capacity to treat the volume of deepwell injected D002 wastewaters and nonwastewaters at American Cyanamid, EPA does not believe that there is sufficient capacity to

treat the volume of D002 wastewaters and nonwastewaters deepwell injected nationwide. EPA, therefore, is extending the national capacity variance given to injected D002 wastewaters to include injected D002 nonwastewaters.

The national capacity variance for deepwell injected D002 wastes does not supercede the California list prohibitions. The prohibition for California list corrosives applies to Third Third corrosives that are granted a national capacity variance in today's rulemaking. EPA believes that not applying the more generally applicable California list prohibitions as an interim prohibition is contrary to the literal statutory language and enunciations of Congressional intent in the legislative history. Therefore, a corrosive liquid, as defined by the paint filter liquids test, with a pH less than 2.0, that is injected underground is at a minimum subject to the California list prohibitions on August 8, 1990. The variance, therefore, only applies to injected D002 wastes with a pH greater than 12.5; and non-liquids, as defined by the paint filter liquids test, with a pH less than 2.0.

Comments:

The comments relevant to this issue are presented in the following order:

- American Cyanamid Company (087); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00087

Commenter: American Cyanamid Company

Comment:

IV. EPA should provide a national capacity variance for D002 nonwastewaters which are disposed by deepwell injection.

To describe the corrosive characteristic waste group EPA paraphrased the criteria for defining D002 wastes from 40 CFR 261.22; "a waste can be a D002 waste if it is aqueous and has a pH less than or equal to 2, or greater than or equal to 12.5..." (54 FR 48422). The D002 Acid and Alkaline Subcategories only include wastes which are considered to be "aqueous" due to the fact that standard pH measurements can only be made in the presence of significant amounts of water. EPA appropriately recognizes that D002 wastes in the Acid subcategory typically include concentrated spent acids, acidic wastewaters, and spent acid strippers and cleaners (54 FR 48422) some of which are nonwastewaters (contain more than 1% TOC or more than 1% TSS). EPA has not distinguished wastewater from nonwastewater in the development of treatment standards for some of the subcategories of D001, D002, and D003 (54 FR 48419), nor does there appear to be a need to do so in order to set treatment standards for D002 Acid and Alkaline Subcategory. There is also no indication in the preamble discussion of the treatability standard that EPA has set separate treatment standards for the wastewater and nonwastewater forms of D002 Acid and Alkaline Subcategory.

Further, the Background Document for Third Third Volumes, Characteristics, and Required and Available Treatment Capacity, Volume II also identifies that both wastewater and nonwastewater D002 exists. The table (Table 3-169) which identifies the volumes of D002 waste that are deepwell-injected and surface-disposed, however, does not differentiate between wastewater and nonwastewater. Although recognizing that both the wastewater and nonwastewater forms of D002 exist and apparently not finding it appropriate or necessary to distinguish between the types in developing treatment standards nor in evaluating alternative capacities, the Agency then proposes in the regulatory language section (54 FR 48508) to establish a May 8, 1990 prohibition date for D002 injected nonwastewaters and to grant a two year variance to D002 wastewaters being deepwell injected. We suggest that the preamble discussions do not support this differentiation and that the early prohibition date for the D002 nonwastewater category has inappropriately been established without the required treatment capacity analysis.

Docket Number: LD12-00087 (continued)

Commenter: American Cyanamid Company

Comment: (continued)

American Cyanamid is currently injecting 42 million gallons per year of 30% spent sulfuric acid that is contaminated with more than 1% organics. EPA considers this D002 aqueous waste a "nonwastewater" for purposes of determining its treatability group since it contains greater than or equal to 1% TOC (general definition used in land ban regulations - 54 FR 48383). Table III.B.2.(c) indicates that there is only 13 million gallons/year of alternative commercial treatment capacity for underground injected wastes requiring neutralization. EPA, although not differentiating between wastewater and nonwastewater physical forms, has proposed to grant a two year national variance only to wastewater. Since American Cyanamid's D002 nonwastewater, in and of itself, exceeds the available capacity, EPA should grant a two year treatment capacity variance to D002 nonwastewater, restricting this waste from underground injection on May 8, 1992.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC does not agree with the comments of American Cyanamid (LD12-00087) regarding a deep well injection capacity variance for D002 non-wastewaters. First, an excess of available neutralization capacity exists as detailed in Table III-B.1(c) (54FR 48475). In addition, most of the chemical precipitation capacity is also neutralization capacity, as metals are precipitated using lime or caustic which also neutralize a

waste stream. Combining available chemical precipitation capacity with available neutralization capacity in Table III B.1.(c) accounts for a total of 352 million gallons per year capacity available for D002 non-wastewaters. Considering injection data in Table III B.2(c) the available net capacity is 235 million gallons per year for neutralization of D002 non-wastewaters. Neutralization capacity, in addition, is easy to bring on line.

If chemical precipitation capacity is also considered, there is ample capacity to manage this 42 million gallons/year D002 waste currently deep well injected by American Cyanamid.

12.2 D003 (Reactive Cyanide) Are Deepwell Injected

Summary:

EPA received three comments (American Cyanamid Company (087); Sterling Chemicals (197); and Hazardous Waste Treatment Council (HWTC) (L247)) regarding the deepwell injection of D003 (reactive cyanide) nonwastewaters. Both American Cyanamid and Sterling Chemicals expressed to EPA that D003 (reactive cyanide) nonwastewaters are currently being deepwell injected and submitted data supporting this claim. However, American Cyanamid stated that the deepwell injection section of the preamble made no indication that D003 (reactive cyanide) nonwastewaters were included in the capacity variance extended to D003 (reactive cyanide) wastewaters. Both commenters requested a reevaluation of the capacity analysis and suggested that the capacity variance be extended to both wastewater and nonwastewater forms of D003 (reactive cyanide). The Hazardous Waste Treatment Council disagreed with the variance requested for D003 (reactive cyanide) nonwastewaters, stating that these wastes could be treated by the 8.2 million gallons of alkaline chlorination/chemical precipitation capacity and 22 million gallons of chemical oxidation capacity (Table III-B.2(c)). In addition, HWTC mentioned that additional treatment capacity is available through hydrogen peroxide systems provided by various vendors.

Response:

EPA has reviewed its analysis of D003 wastes and agrees with American Cyanamid and Sterling Chemicals that D003 nonwastewaters are deepwell injected. EPA did not have any data on injection of D003 (reactive cyanide) at American Cyanamid and has included this new data in the capacity analysis. EPA has also updated the data for Sterling Chemicals based on the information submitted during the public comment period. EPA disagrees with the Hazardous Waste Treatment Council that enough treatment capacity exists for the total volume of deepwell injected D003 nonwastewaters. For the capacity analysis, EPA assigns waste volumes to the technology upon

which the standard is based. EPA has identified a shortfall of alkaline chlorination capacity. EPA, therefore, is extending the national capacity variance given to injected D003 wastewaters to include injected D003 nonwastewaters. EPA would also like to clarify that this variance applies to all subcategories of injected D003 and not only the reactive cyanide subcategory. For the other subcategories, EPA considered all appropriate technologies and has determined that there is inadequate capacity for treating the deepwell injected volumes of these D003 nonwastewaters as well as wastewaters.

Comments:

The comments relevant to this issue are presented in the following order:

- American Cyanamid Company (087);
- Sterling Chemicals (197); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00087

Commenter: American Cyanamid Company

Comment:

VII. EPA should provide a national capacity variance for D003a (reactive cyanides) nonwastewaters which are disposed by deep well injection.

EPA has not distinguished wastewater from nonwastewater in the development of treatment standards for some of the subcategories of D001, D002, and D003 (54 FR 48419). As in the case of D002 wastes, there does not appear to be a need to do so to set treatment standards for D003a Reactive Cyanide Subcategory. There is also no indication in the preamble discussion of the treatability standard that EPA has set separate treatment standards for the wastewater and nonwastewater form of D003a Reactive Cyanide Subcategory.

The Background Document for Third Third Volumes, Characteristics, and Required and Available Treatment Capacity, Volume II also identifies that both wastewater and nonwastewater D003a exists.

The table (Table 3-170) which identifies the volumes of D003a waste that is deepwell-injected and surface-disposed however does not differentiate between wastewater and nonwastewater. For D003a wastes being deepwell-injected, the Agency has identified that inadequate alternative capacity is available to treat these wastes and therefore proposes to grant a two-year capacity variance to D003a wastes being deepwell injected. However, in the regulatory language section of the proposed rules D003a nonwastewaters are prohibited from underground injection on May 8, 1990 (54 FR 48508). EPA has inappropriately established this prohibition without determining whether capacity exists to treat D003a Reactive Cyanide subcategory nonwastewaters.

American Cyanamid is currently injecting 36.5 million gallons per year of D003a that is contaminated with more than 1% organics. This D003a is considered a nonwastewater for purposes of determining its treatability group since it contains greater than or equal to 1% TOC (general definition used in land ban regulations - 54 FR 48383). Table III.B.2.(c) indicates that there is only 1.8 million gallons/year of alternative commercial treatment capacity for underground injected wastes requiring alkaline chlorination. EPA, although not differentiating between wastewater and nonwastewater physical forms, has proposed to only grant a two year national variance to wastewater. Since American Cyanamid's D003a nonwastewater, in and of itself, exceeds the available capacity, EPA should grant a two year treatment capacity variance to D003a nonwastewater, restricting this waste from underground injection on May 8, 1992.

Docket Number: LD12-00197

Commenter: Sterling Chemicals

Comment:

3. The Agency data base on D003a (cyanide reactive) characteristic wastes and wastewaters is incomplete. The following data demonstrate that two year national capacity variances should be granted for D003a wastes and wastewaters.

a. Injected D003a Wastes

Sterling Chemicals generates a characteristic reactive cyanide hazardous waste, D003a, and manages it in an injection well system together with listed hazardous wastes K011 and K013. The volumes of all the wastes generated and injected were reported in the 1986 National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (the "TSDR Survey") in the aggregate. This aggregate report has apparently caused a gross underestimate of the D003a waste volumes that are generated at this facility and in the United States. The Agency must consider the following data along with the existing 1986 TSDR Survey data in evaluating available alternative treatment capacity.

Sterling Chemicals' D003a characteristic (cyanide reactive) waste is an aqueous waste with a Total Organic Carbon ("TOC") content of greater than one percent. It is therefore a nonwastewater based on the criteria discussed in the proposed regulation. Sterling Chemicals generated approximately 9 million gallons of this waste in 1986, 11 million gallons in 1987, and 9 million gallons in 1988. The waste is aggregated with the K011 and K013 wastes and managed in surface tanks prior to injection.

Proposed BDAF for this waste is alkaline chlorination. As shown in Table III.B.2.(c), nationwide available alternative treatment capacity is only 1.8 million gallons per year. This nationwide available alternative treatment capacity is only twenty percent of the capacity required by Sterling Chemicals alone to comply with the proposed requirements.

Sterling Chemicals requests a two year national capacity variance to be granted for nonwastewater and wastewater forms of D003a (cyanide reactive) characteristic hazardous wastes which are underground injected because of lack of available alternative treatment capacity.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC supports the prohibition from deep well injection of D003 non-wastewaters after May 8, 1990. We do not agree with the comments made by American Cyanamid (LD12-00087), that EPA should also allow deep well injection of non-wastewater forms of D003. As in the D002 case above, American Cyanamid is currently injecting waste containing in excess of 1% organics with cyanide. EPA should make certain that they are not injecting this waste in the same well and deep well formation with the 30% H_2SO_4 stream they are injecting as a highly hazardous reactive situation will exist where large volumes of lethal hydrogen cyanide gas will be generated.

The 36.5 million gallons per year of D003 non-wastewater injected by Cyanamid can be managed by 8.2 million gallons of available alkaline chlorination/ chemical precipitation capacity and 22 million gallons of chemical oxidation capacity. Other oxidizing agents, such as hydrogen peroxide are also useful for cyanide destruction. Degussa Chemical Company in Rutherford, New Jersey markets packaged peroxide systems for treatment of cyanide waste, as also does Cyanide Destruct Systems (CDS) of Guelph, Ontario. These packaged system could easily be installed to treat non-wastewater cyanide waste prior to deep well injection. This capacity is in addition to that cited by EPA in Table III B.2(c).

In any event, there may also be a classification problem, as this non-wastewater stream deep well injected by Cyanamid contains substantial organics, and may more appropriately be a D001 waste, as in the D002 case above. EPA must audit this American Cyanamid plant in Westwego, LA. to make certain that these D002 and D003 non-wastewater streams have been properly classified, before making any conclusion to extend the deep well injection variance to non-wastewater D002 and D003, especially since this is the only plant in the United States that has expressed this as a problem.

12.3 D007 Nonwastewaters Are Deepwell Injected**Summary:**

The Chemical Manufacturers Association (CMA)(L007H) submitted data from a deepwell injection well survey indicating that D007 nonwastewaters may be deepwell injected.

Response:

EPA has reviewed the data submitted during the public comment period and subsequently reanalyzed the D007 wastestream data and agrees that D007 nonwastewaters are currently deepwell injected. EPA is therefore extending the national capacity variance for injected D007 to include both wastewater and nonwastewater forms of the waste.

Comments:

The comment relevant to this issue is presented as follows:

- Chemical Manufacturers Association (CMA) (L007H).

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association (CMA)

Comment:

FINAL REPORT

SUMMARY OF
CHEMICAL MANUFACTURERS ASSOCIATION
UNDERGROUND INJECTION WELL SURVEY

Waste Code	1981 % Water Content	1982 % Water Content	1983 % Water Content	1984 % Water Content
D001	99.30	99.31	99.30	98.11
D002	95.11	94.86	95.77	94.63
D003	96.97	98.02	96.06	92.12
D007	99.85	99.90	99.90	99.00
F002	99.00	99.00	99.00	99.00
F003	99.25	99.66	99.48	99.62
F004	99.00	99.00	99.00	99.00
F005	99.25	99.66	99.48	-
K009	90.51	99.29	99.11	99.29
K010	98.92	99.29	99.11	99.28
K011	94.12	93.27	93.35	94.14
K013	95.35	95.11	95.09	95.36
K014	99.00	98.66	97.32	99.00
K019	-	-	.10	.10
K025	99.00	99.00	99.00	99.00
K030	-	-	-	-
K033	99.00	99.00	99.00	99.00
K083	99.90	99.90	99.90	-
K104	99.00	99.00	99.00	99.00
P024	99.00	99.00	99.00	99.00
U001	99.00	-	-	-
U019	97.00	97.00	97.00	-
U041	90.00	90.00	90.00	-
U115	99.00	97.75	97.75	99.00
U122	99.00	99.00	99.00	99.00
U154	-	99.00	99.00	85.54
U188	90.00	90.00	90.00	-
U197	-	-	-	99.00
U211	-	-	-	-
Other	97.33	97.76	97.15	95.50
TOTAL	95.64	95.23	95.49	94.54

12.4 K014 Nonwastewaters Are Deepwell Injected**Summary:**

Four commenters (BP America, Inc. (098); E.I. DuPont De Nemours & Company (189); BP Chemicals, Inc. (216); and the Chemical Manufacturers Association (CMA) (L007H)) responded to EPA's request for data on K014, and submitted evidence indicating that K014 classified as a nonwastewater, due to the wastewater/nonwastewater definition, is deepwell injected and would require a variance.

Response:

EPA has reviewed its analysis of K014 and agrees that, by definition, K014 nonwastewaters are deepwell injected. EPA is therefore extending the variance for injected K014 to include both wastewater and nonwastewater forms of the waste.

Comments:

The comments relevant to this issue are presented in the following order:

- BP America, Inc. (098);
- E.I. DuPont De Nemours & Company (189);
- BP Chemicals, Inc. (216); and
- Chemical Manufacturers Association (CMA) (L007H).

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

4. K014 irrespective of its treatability group, is being injected and should be given a two year national capacity variance anchored to the May 8, 1990 prohibition date.

The Agency is specifically soliciting information on the composition, characteristics, and volumes associated with K014 non-wastewater that is being injected (54 FR 48486). EPA already has data for K014 showing that the waste as generated contain about 20,000 mg/l acetonitrile, 3.3 to 8.0 percent TOC, and 8 to 831 mg/l TSS. (See Table 2-3, Proposed BOAT Background Document for K011, K013, and K014 (Addendum).)

Docket Number: LD12-00189

Commenter: E.I. DuPont De Nemours & Company

Comment:

As noted previously, Du Pont participated in the development of comments submitted by the "Ad Hoc Acrylonitrile Producers UIC Group" and incorporates those comments herein. Du Pont would like to emphasize its strong support for the Agency's proposal to increase the %TOC level above 1% whereby such wastes would be considered "wastewaters" for land disposal restriction purposes. Du Pont's K011/K013/K014 combined streams generally exceed 1% TOC yet are currently disposed by underground injection. This disposal technique is appropriate for these wastes and we believe is an environmentally protective disposal method at our Beaumont, TX plant where these waste streams are generated. Unless the Agency increases the %TOC level for such acrylonitrile wastes, these wastes may be prohibited from being disposed by underground injection. We believe that such an elevation of %TOC for the purposes of considering these streams "wastewaters" for land ban purposes is appropriate and reflective of the actual waste management practices prevalent in the industry today. The level selected should certainly be no lower than 3.5% and we would request that the Agency seriously consider the request of the Ad Hoc group that, based on the BDAT technology selected for these wastes of wet air oxidation, that a higher %TOC level is certainly justified.

Docket Number: LD12-00216

Commenter: BP Chemicals Inc.

Comment:

4. K014 irrespective of its treatability group, is being injected and should be given a two year national capacity variance anchored to the May 8, 1990 prohibition date.

The Agency is specifically soliciting information on the composition, characteristics, and volumes associated with K014 non-wastewater that is being injected (54 FR 48486). EPA already has data for K014 showing that the waste as generated contain about 20,000 mg/l acetonitrile, 3.3 to 8.0 percent TOC, and 8 to 831 mg/l TSS. (See Table 2-3, Proposed BDAT Background Document for K011, K013, and K014 (Addendum).)

Irrespective of the treatability group (i.e., wastewater or non-wastewater), EPA should and can provide a national capacity variance allowing continued injection until May 8, 1992 for K014 that is disposed by injection. BP Chemicals injects more than 3,500,000 gallons of "K014" annually. This is a substantial volume and the logistics and expense of transporting it offsite are considerable.

Docket Number: LD12-00216 (continued)

Commenter: BP Chemicals Inc.

Comment: (continued)

If "K014" were determined to be prohibited from injection as of May 8, 1990, the interim solution may be to discontinue producing the purified acetonitrile. This would be a truly unfortunate consequence of this regulation since acetonitrile is used to make human insulin which is already in short supply.

"K014" is only generated at facilities that purify acetonitrile rather than treat or dispose of it as a waste or reuse it as a fuel. The volume and characteristics of the waste as generated does not make it amenable to onsite incineration. This waste stream has been included in our deepwell "no migration" petition demonstrating that injection is protective of human health and the environment.

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association (CMA)

Comment:

FINAL REPORT

SUMMARY OF
CHEMICAL MANUFACTURERS ASSOCIATION
UNDERGROUND INJECTION WELL SURVEY

Waste Code	1981 % Water Content	1982 % Water Content	1983 % Water Content	1984 % Water Content
D001	99.30	99.31	99.30	98.11
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D007	99.85	99.90	99.90	99.00
F002	99.00	99.00	99.00	99.00
F003	99.25	99.66	99.48	99.62
F004	99.00	99.00	99.00	99.00
F005	99.25	99.66	99.48	-
K009	90.51	99.29	99.11	99.28
K010	98.92	99.29	99.11	99.28
K011	94.12	93.27	93.35	94.14
K013	95.35	95.11	95.09	95.36
K014	99.00	98.66	97.32	99.00
K019	-	-	.10	.10
K025	99.00	99.00	99.00	99.00
K030	-	-	-	-
K033	99.00	99.00	99.00	99.00
K083	99.90	99.90	99.90	-
K104	99.00	99.00	99.00	99.00
P024	99.00	99.00	99.00	99.00
U001	99.00	-	-	-
U019	97.00	97.00	97.00	-
U041	90.00	90.00	90.00	-
U115	99.00	97.75	97.75	99.00
U122	99.00	99.00	99.00	99.00
U154	-	99.00	99.00	85.54
U188	90.00	90.00	90.00	-
U197	-	-	-	99.00
U211	-	-	-	-
Other	97.33	97.76	97.15	95.50
TOTAL	95.64	95.23	95.49	94.54

12.5 A Variance Is Necessary For D002 Wastes With A pH Less Than 2.0**Summary:**

In the Third Third proposed rule, EPA solicited comment on whether it would be permissible to reevaluate whether the California list prohibitions for acid corrosive wastes would apply during the period of a national capacity variance for Third Third acid corrosive wastes (which are identical substances). American Cyanamid Company (087), E.I. DuPont De Nemours & Company (189), and the Chemical Manufacturers Association (CMA) (L007) stated that EPA needed to include D002 wastewaters with a pH less than 2.0, first regulated under the California list rulemaking, in the capacity variance for injected D002 wastes. CMA discussed EPA's authority to reevaluate national capacity for corrosive wastes with a pH less than 2.0 when setting standards under 3004(g)(4) and agreed that EPA had the authority to do so. All three stated that treatment capacity is still lacking, necessitating a capacity variance for this waste.

Response:

Based on the Hazardous and Solid Waste Amendments (HSWA), the prohibition for California list corrosives should apply to Third Third corrosives that are granted a national capacity variance in today's rulemaking. EPA believes that not applying the more generally applicable California list prohibitions as an interim prohibition is contrary to the literal statutory language and enunciations of Congressional intent in the legislative history. Also, given the fact that these wastes received a national capacity variance on August 8, 1988, it is unreasonable that EPA would grant these wastes a capacity extension in today's rulemaking. Therefore, a corrosive liquid, as defined by the paint filter liquids test, with a pH less than 2.0, that is injected underground is at a minimum subject to the California list prohibitions on August 8, 1990. The variance for injected D002 wastes only applies to corrosives with a pH greater than 12.5 and non-liquids, as defined by the paint filter liquids tests, with a pH less than 2.0.

Comments:

The comments relevant to this issue are presented in the following order:

- American Cyanamid Company (087);
- E.I. DuPont De Nemours & Company (189); and
- Chemical Manufacturers Association (CMA) (L007).

Docket Number: LD12-00087

Commenter: American Cyanamid Company

Comment:

V. The proposed capacity variance for injected D002 wastes should supersede the California-List national variance for injected corrosive wastes with a pH less than 2.

The proposal explains that more specific standards supersede the California-List prohibitions only after the actual effective dates of the more waste-specific prohibition. During the period of any capacity variance for the more specific waste, the California-List prohibition would continue to apply (53 FR 31186). Under the Agency's current approach, injected California-List wastes with a pH of less than 2 would be prohibited from land disposal on August 8, 1990. Injected corrosive waste with a pH of 9 or above would not be prohibited until May 8, 1992 (54 FR 48498). However, EPA believes that they have the authority to reevaluate the national capacity for corrosive waste with a pH of less than 2 when setting standards for such wastes. Despite the capacity variance previously granted for California-List corrosives, there is still a serious shortfall in neutralization capacity. When EPA granted the national capacity variance for more than one billion gallons of California-List with a pH less than 2 there were only 36 million gallons of neutralization capacity available. Some of that capacity and any new capacity expected to be available prior to May 8, 1990 has been assumed to be utilized for treatment of corrosive wastes that had been treated in surface land disposal units.

Docket Number: LD12-00189

Commenter: E.I. DuPont De Nemours & Company

Comment:

Du Pont further believes that the Agency should not be constrained by previous determinations regarding "California List" decisions, because these D002 wastes should receive "independent" review by the Agency. As EPA is well aware of, there remains a serious shortfall of alternative capacity for wastes with pH less than 2, and for this reason the Agency should grant the two-year variance. According to EPA's own "Background Document for Third-Third Wastes", November 1989), there exists only 13 million gallons of neutralization capacity available to treat over 1.6 billion gallons of corrosive wastes currently injected.

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association (CMA)

Comment:

- C. The Proposed Capacity Variance for Injected D002
Wastes Should Include Injected Corrosive Wastes With
pH Less than 2.

CMA concurs with the Agency's view that it can permissibly construe RCRA to grant EPA independent authority to reevaluate national capacity for corrosive wastes with a pH of less than 2 when setting standards for characteristic wastes pursuant to Section 3004(g)(4). See 54 Fed. Reg. at 48,499/1. Just as treatment standards for Third Third wastes preempt treatment standards for California-List wastes, capacity determinations for Third Third characteristic wastes should supersede capacity determinations for California-List wastes. Liquid injected wastes with a pH of less than 2 are a subset of the D002 category that the Agency is directed to consider by May 8, 1990. Consistent with this schedule, it is incumbent upon the Agency to examine the current availability of treatment capacity for D002 wastes as a whole, including liquid wastes with a pH less than 2.

Despite the capacity variance previously granted for California-list corrosives, there is still a serious shortfall in neutralization capacity -- a shortfall that will increase substantially if EPA adopts its proposed treatment methodology. When EPA granted the national capacity variance for more than one billion gallons of California-List with a pH less than 2, 36 million gallons of neutralization capacity existed. Some of that capacity, and any new capacity expected to be available prior to May 8, 1990, has been assumed to be used

Docket Number: LD12-L0007 (continued)
Commenter: Chemical Manufacturers Association (CMA)
Comment: (continued)

for treatment of corrosive wastes that had been treated in surface ~~land~~-disposal units. Only 13 million gallons of neutralization capacity are available to treat the 1.64 billion gallons of corrosive wastes currently injected. EPA Background Document for Third Third Wastes to Support 40 CFR part 268 Land Disposal Restriction, Third Third Wastes Volumes, Characteristics, and Required and Available Treatment Capacity at 3-243 through 3-244 (November, 1989). Accordingly, it would be untenable to ban corrosive with pH of less than 2 at a time when such capacity is still wanting.

For the same reasons, injected corrosive with a pH less than should not be subjected to California-list prohibitions during the variance for Third Third characteristic wastes. More than 60 percent of the D002 wastewater injected has a pH less than 2. SCS Survey at B-13.

Subjecting these wastes to California-list treatment requirements will vitiate any benefit derived from a variance for D002 wastes. If prohibited from deepwell injection on August 8, 1990, injected corrosives will create an enormous demand for treatment that does not exist and will displace other wastes from treatment.

**12.6 Difficulty In Isolating Injected P And U Wastes For Treatment By The Effective Date
Necessitates A Variance**

Summary:

BP America, Inc. (098) and BP Chemicals, Inc. (216) stated their concern that isolating P and U wastes for treatment prior to injection is virtually infeasible by the effective date of the rulemaking, and therefore requested a capacity variance. These two commenters also stated that they are awaiting approval of no-migration petitions.

Response:

EPA has determined that the Third Third final rule will affect the management of large volumes of waste disposed on-site in injection wells at a number of facilities. The injection wells at these facilities are directly connected to the plant production operations and, all totaled, handle at least five billion gallons of hazardous waste per year. In order to realistically meet the treatment requirements for the Third Third rule, the plant managers will need time to make considerable logistical adjustments such as repiping, retooling, and development of transportation networks at the plant operation facility.

EPA has relied on such logistic factors in prior rulemakings to determine when capacity is realistically available. EPA notes that these same logistic factors do not appear necessary to warrant any extension for wastes sent to off-site commercial injection facilities as those for on-site injection facilities. Therefore, EPA is exercising its authority under section 3004(h) of RCRA, providing a six-month extension beyond the May 8, 1990 statutory prohibition for all Third Third waste disposed at on-site injection facilities.

Comments:

The comments relevant to this issue are presented in the following order:

- BP America, Inc. (098); and
- BP Chemicals, Inc. (216).

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

VIII. U and P wastes that are injected are difficult to isolate for treatment. EPA should provide a variance to allow time to comply with land ban prohibitions.

At the two BP Chemicals plants that use injection wells the centralized pretreatment facility provides secondary containment for spills of commercial chemicals. Recoverable product is collected and reworked via the chemical sewer system. The more dilute washwater from cleaning up a spill of a commercial chemical product is not separated from other washwater and stormwater. Since the washwater does not flow through a discrete pipe it is difficult to determine the volume generated by spills only. This washwater is normally relatively dilute and would not cause the injectate to have a significantly different concentration of hazardous constituents.

The associated NPDES facilities have not been designed to handle the washwater from clean up of spilled chemicals. They do not treat listed hazardous waste, and the sludges generated are not hazardous waste. To add the spill washwater to the NPDES system would have significant ramifications. Solving the problem is not as simple as running pipe from one sump to another sump.

The BP Chemical deep well "no migration" petitions demonstrating that the injection wells are protective of human health and the environment include these washwaters. These petitions have been in the review process for 1 to 2 years. There is continuing uncertainty about the ability to complete the review process prior to the prohibitions. We feel certain that the petitions will be approved and have acted in good faith to obtain timely approval. The risk of continued injection of these washwaters is low, it seems unwarranted to require alternative solutions to be developed for the short interim period prior to petition approval.

Commercial chemical products or their intermediates that might possibly be spilled at these two facilities include:

- o acrylonitrile (U009)
- o hydrocyanic acid (P063)
- o acetonitrile (U003)
- o acetone (U002)

12-30

Deepwell Injected Wastes

Docket Number: LD12-00216

Commenter: BP Chemicals Inc.

Comment:

U and P wastes that are deepwell injected are difficult to isolate for treatment. EPA should provide a variance to allow time to comply with land ban prohibitions.

12.7 EPA's Methodology For Determining P And U Volumes Was Flawed, Resulting In Low Volumes That Did Not Reflect The Real Need For A Capacity Variance

Summary:

EPA received four comments regarding deepwell injected P and U wastes. In response to EPA's request for comment concerning P and U volumes, three commenters indicated that EPA's analysis methodology for determining actual P and U volumes (100,000 gallons at the point of generation) was flawed and resulted in artificially low estimates. American Cyanamid Company (087) believed that the volume is much higher due to the fact that its facility's volume at the point of generation (3.3 million gallons) was 4.3 times larger than the entire EPA estimate of injected P and U waste. American Cyanamid also believed that the true volumes were large enough to warrant a capacity variance due to lack of available treatment and inability to transport offsite.

Hoechst Celanese Corporation (L010) informed EPA that a change in EPA's interpretation of the mixture rule to include de minimis losses of commercial chemical product, currently exempt from RCRA under 40 CFR Part 261.3(a)(2)(iv), would create the need for a capacity variance for all deepwell injected P and U wastes due to large volumes of these wastes currently being injected: over 600 million gallons at their facility alone. American Cyanamid also questioned EPA's intentions regarding 40 CFR Part 261.3(a)(2)(iv). Both commenters expressed concern that recent EPA statements regarding the scope of this exemption imply that certain large volumes of wastewater will require treatment of the P and U wastes within the wastewater stream before injection, and that capacity for treatment of such wastestreams is not currently available.

BP America, Inc. (098) described how washwater used to clean up spills often accumulates many significantly dilute wastes, since sewer systems are designed to commingle wastes, creating a much larger volume of waste as a result of the mixture rule. BP America also stated that this would

not cause the injectate to have a significantly different concentration of hazardous constituents. Further, it was stated that NPDES facilities could not handle the waste.

The Hazardous Waste Treatment Council (HWTC) (L247) disagreed with both American Cyanamid and BP America, stating that a variance was unnecessary and that engineering to eliminate these spills should be encouraged as opposed to continued deepwell injection. HWTC reminded EPA that BP America provided no hard data and that the volume associated with American Cyanamid is too small to provide any real impact on available capacity.

Response:

EPA acknowledges these comments, and agrees that both American Cyanamid and Hoechst Celanese do generate more than 100,000 gallons of P and U wastes, contradicting EPA's methodology. However, EPA believes that these situations are unique, and received no other hard data to indicate that EPA's assumption for determining P and U volumes was incorrect. The volumes reported by both of these facilities are also exempt from RCRA, thus exempt from the land disposal restrictions, under Section 261.3(a)(2)(iv) (discussed in detail below). BP America (098) believed the methodology to be incorrect, but was unable to provide any detailed volume information. Contact with BP indicated that washwaters at their facility are not currently exempt under 40 CFR Part 261.3(a)(2)(iv), but are under review for this exemption by legal counsel and EPA. Therefore, EPA is not changing the methodology. EPA also agrees with the Hazardous Waste Treatment Council, believing that adequate available treatment capacity exists for the volume of P and U wastes requiring treatment. Therefore, no capacity variance is being granted for these wastes.

EPA would like to address the concern regarding the mixture rule exception under 40 CFR Part 261.3(a)(2)(iv). This provision exempts mixtures which contain small amounts of listed spent

solvents ("F-listed solvents") or de minimis losses of other commercial chemical wastes ("P and U wastes") from manufacturing operations when these listed wastes are mixed with other wastewater "the discharge of which is subject to regulation under either Section 402 or Section 307(b) of the Clean Water Act (including wastewater at facilities that have eliminated the discharge of wastewater)." Commenters raised the issue of whether disposal of such mixtures via Class I UIC wells allows the facility to claim this exemption.

In the 1981 interim final rule, EPA did not exempt all de minimis mixtures generated at all facilities. Rather, EPA limited the exemption as follows: "[The exemption] applies only to wastewater mixtures managed in wastewater treatment systems whose discharge is subject to regulation under either Section 402 or 307(b) of the Clean Water Act. This requirement will help to prevent indiscriminate discharge of wastes into wastewater treatment systems because to do so would jeopardize the generator's ability to comply with its Clean Water Act discharge requirements. By the phrase *wastewater subject to regulation under either Section 402 or 307(b) of the Clean Water Act*, EPA means to include all facilities which generate wastewater which is discharged into surface water or into a POTW sewer system. EPA also means to include those facilities (known as "zero dischargers") that have eliminated the discharge of wastewater as a result of, or by exceeding, NPDES or pretreatment program requirements." 46 FR 56584 (November 17, 1981).

Furthermore, the applicability of the mixture rule exception for P and U wastes was limited to the introduction of these wastes into wastewater "in normal handling of these materials, either as raw products used in the manufacturing process or an intermediate or chemical products used in or produced by the manufacturing process." 46 FR 56586. Injection of a fluid in a UIC well is not a "discharge" within the meaning of the Clean Water Act. Injection wells can, in appropriate instances, constitute a practice which has "eliminated the discharge of wastewater," but these instances must be evaluated on a case-by-case basis. As the regulation states, the issue is whether the

"discharge" is subject to Sections 402 or 307(b) of the Clean Water Act, not whether the facility is "subject to regulation" under Section 402. A UIC well, whether or not the State adopts its regulations under Section 402(d) as well as the Safe Drinking Water Act, is not a Clean Water Act discharge point. Thus, facilities with wells for injection of wastewater do not fall within the mixture rule exception simply because they have an injection well on-site.

UIC wells may, however, be "zero discharge" facilities, i.e., those which have eliminated their discharge. To qualify as such a facility, it must satisfy the definition of a "zero discharge" facility outlined in the regulation. To repeat the language from the 1981 preamble discussing that provision, "The Agency also means to include those facilities (known as "zero dischargers") that have eliminated the discharge of wastewater as a result of, or by exceeding, NPDES or pretreatment program requirements." 46 FR 56584 (November 17, 1981) (emphasis added). Thus, a UIC well will certainly qualify as a zero discharge facility if the facility injects the wastewater to comply with NPDES permit conditions or an applicable Clean Water Act effluent guideline. A well at a facility which is not "subject to [Clean Water Act] regulation" under an NPDES permit or an effluent guideline is not within the scope of the language of the mixture rule exception. EPA notes that this interpretation is fully consistent with its 1981 preamble, and thus does not constitute a "change" in interpretation, as suggested by one commenter.

EPA notes, that, as a practical matter, the facilities concerned about the scope of the mixture rule exception are likely unaffected by today's clarification. Most of these facilities are, in fact, in an industry category (organic chemicals) whose facilities are "subject to regulation" under Section 402 of the Clean Water Act by virtue of the effluent guideline for that category. See 40 CFR Part 414 (1989). Thus, EPA does not believe that there will be a problem with treatment capacity for P and U wastes, since wastewaters containing de minimis amounts of P and U wastes now being injected are primarily unaffected by today's rule (since they are not hazardous wastes).

Nonetheless, EPA wishes to caution such facilities that the de minimis exemption does not constitute a license to mix collected volumes of F, P, or U wastes into a treated wastewater stream and then inject such a stream. As EPA clearly stated in 1981, the exemption is designed to cover situations where "various spills or incidental losses" of solvents or commercial chemicals are "reasonably and efficiently managed by being discharged into a plant's wastewater treatment system." 46 FR 56584 (November 17, 1981).

Comments:

The comments relevant to this issue are presented in the following order:

- American Cyanamid Company (087);
- BP America, Inc. (098);
- Hoechst Celanese Corporation (L010); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00087

Commenter: American Cyanamid Company

Comment:

I. EPA has underestimated the volumes of many of the P and U coded wastes that are currently injected and the alternative capacity needed to treat these wastes.

EPA has significantly underestimated the amount of P and U waste that is being injected. The Treatment, Storage, Disposal, and Recycling (TSDR) Survey, used by the Agency to evaluate alternative treatment capacity needs, identified several large volumes of P and U wastes reported as being deep well injected. The Agency contacted the firms, including Cyanamid, reporting these large streams to determine if the volumes were actually generated as much smaller volumes and subsequently mixed with a larger stream.

When the amount which had been reported was based upon a mixture, the Agency assumed that 100,000 gallons per year was a reasonable estimate to the volume as measured at the point of generation. As discussed below, neither the concept of 100,000 gallons generated yearly at source nor the idea of being able to separate the wastes for determining capacity needs is valid.

American Cyanamid injects, among other things, P069, U002, U007, U009, U154, U162, and U220 wastes. These wastes are injected as part of a larger stream that totals approximately 200 million gallons per year. We have estimated that our P and U wastes at their various points of generation total more than 3.3 million gallons per year, a figure that is 4.3 times greater than the total volume of these wastes estimated by EPA to be injected nationwide. We believe that this type of discrepancy is indicative of the large amounts of injected P and U waste that have gone unaccounted for in the Agency's proposed Third Third capacity decisions, and that, in fact, many of these wastes, when summed within the chemical industry and across other industries, do warrant a capacity variance. The total 200 million gallon stream which includes the 3.3 million gallons of waste mentioned above are commingled from a number of different sources, including a plantwide storm water intercept system. This system siphons off wash water and spill residue to the disposal wells. Changing this collection system to prevent mixing of P and U wastes with other waste water is environmentally unnecessary, expensive, and cannot be achieved prior to May 8, 1990. It is also questionable whether the remaining volume would still not be subject to the proposed treatment standards due to 40 CFR 261.3 (a)(2)(iv) and

Docket Number: LD12-00087 (continued)

Commenter: American Cyanamid Company

Comment: (continued)

(c)(2)(i) unless and until the entire treatment facility undergoes closure per 40 CFR 264 Subpart G and 264.197. Even if such a rerouting could be achieved, the logistics of transporting a high volume, relatively dilute waste offsite for treatment can severely delay or prevent the treatment of the waste. (CMA comments of the First Third proposed rule explain this concern in more detail.) It may be necessary to add equipment as well as make tie-ins to loading facilities. Transportation sources may be unavailable, leading to substantial commitments to bring new equipment into service. These logistical concerns may not be resolvable prior to May 8, 1990, making the off-site treatment capacity inaccessible, and therefore unavailable.

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

- o EPA has adjusted the volume of U and P coded wastes reported to be injected. This adjustment ignores the actuality that sewer systems are designed to commingle wastes. EPA instead artificially segregates the waste streams to assign capacity.

VIII. U and P wastes that are injected are difficult to isolate for treatment. EPA should provide a variance to allow time to comply with land ban prohibitions.

At the two BP Chemicals plants that use injection wells the centralized pretreatment facility provides secondary containment for spills of commercial chemicals. Recoverable product is collected and reworked via the chemical sewer system. The more dilute washwater from cleaning up a spill of a commercial chemical product is not separated from other washwater and stormwater. Since the washwater does not flow through a discrete pipe it is difficult to determine the volume generated by spills only. This washwater is normally relatively dilute and would not cause the injectate to have a significantly different concentration of hazardous constituents.

The associated NPDES facilities have not been designed to handle the washwater from clean up of spilled chemicals. They do not treat listed hazardous waste, and the sludges generated are not hazardous wastes. To add the spill washwater to the NPDES system would have significant ramifications. Solving the problem is not as simple as running pipe from one sump to another sump.

The BP Chemical deep well "no migration" petitions demonstrating that the injection wells are protective of human health and the environment include these washwaters. These petitions have been in the review process for 1 to 2 years. There is continuing uncertainty about the ability to complete the review process prior to the prohibitions. We feel certain that the petitions will be approved and have acted in good faith to obtain timely approval. The risk of continued injection of these washwaters is low, it seems unwarranted to require alternative solutions to be developed for the short interim period prior to petition approval.

Commercial chemical products or their intermediates that might possibly be spilled at these two facilities include:

- o acrylonitrile (U009)
- o hydrocyanic acid (P063)
- o acetonitrile (U003)
- o acetone (U002)

Docket Number: LD12-L0010

Commenter: Hoechst Celanese Corporation

Comment:

Request for a National Capacity Variance

EPA's proposal at 54 FR 48472 makes the assumption that the volume of P and U RCRA listed wastes being deep well disposed is less than 100,000 gallons per year. On the basis of this assumption, the proposal concludes that there is alternate capacity for these wastes and, therefore, EPA is not proposing to grant a national capacity variance to P and U wastes that are deep well disposed. Hoechst Celanese does not have data to contradict EPA's assumption as it applies to greater than de minimis losses of these P and U listed wastes with the exception of U115 ethylene oxide for which Hoechst Celanese has already requested a national capacity variance. See Hoechst Celanese's comment dated December 21, 1989 (attached). However, to the extent that this assumption addresses de minimis losses of commercial chemical product, the assumption may be incorrect depending on EPA's interpretation of the mixture rule exclusions at 40 CFR 261.3(a)(2)(iv).

Pursuant to the mixture rule, mixtures of hazardous and other solid wastes are generally considered hazardous. Certain mixtures are excluded from this rule, however, if they consist of "wastewater the discharge of which is subject to regulation under either Section 402 or Section 307(b) of the Clean Water Act (including wastewater at facilities which have eliminated the discharge of wastewater)." 40 CFR 261.3(a)(2)(iv). These mixtures include U and P listed discarded commercial chemical products arising from de minimis losses. Both EPA and the Texas Water Commission have in the past interpreted this section as applying to wastewater being deep well disposed. That is, both EPA and the Texas Water Commission have considered injection well effluent to be "wastewater the discharge of which is subject to regulation under either Section 402 or 307(b) of the Clean Water Act (including wastewater at facilities which have eliminated the discharge of wastewater)." Hoechst Celanese firmly believes that this interpretation is correct.

EPA has recently indicated to us that they may have changed their long standing interpretation. Hoechst Celanese would not concur with this change and reserves its right to challenge it. If EPA changes its interpretation, then EPA should consider the entire flow of process wastewater streams containing de minimis losses of U and P listed wastes to be hazardous and to bear the U or P waste codes. We note that these de minimis losses can not, by definition, be segregated from the process wastewater flows.

Docket Number: LD12-L0010 (continued)

Commenter: Hoechst Celanese Corporation

Comment: (continued)

If EPA changes its long standing interpretation of the mixture rule exclusions, then the amount of P and U listed wastes being deep well disposed justifies a national capacity variance. Hoechst Celanese estimates that it deep well disposed over 600 million gallons of waste in 1989 that contained de minimis losses of the following wastes U001, U002, U008, U019, U031, U056, U080, U112, U113, U115, U122, U123, U133, U134, U138, U140, U154, U159, U188, U197, U226 and U239. EPA's proposal sets incineration in a liquids incinerator as the only SDAT treatment common to all of these U listed wastes when generated in the combinations that Hoechst Celanese generates them. Table 3-1 of the Commercial Treatment/Recovery TSDR Survey Data Set prepared for EPA by Versar Inc. in response to EPA contract no. 68-01-7053, work assignment no. 136 (June, 1989) states that the total available capacity of commercial hazardous waste liquids incinerators is only 262 million gallons per year. Therefore, if EPA changes its interpretation on the mixture rule exclusions, Hoechst Celanese's current volume of waste being deep well disposed exceeds the SDAT treatment capacity. This undercapacity is compounded by the fact that should EPA change its interpretation, virtually all streams being deep well disposed nationwide would become P or U listed hazardous wastes.

Accordingly, if EPA changes its interpretation on the mixture rule exclusions, the Agency should grant a two-year national capacity variance for all P and U listed wastes which are injected, specifically including U001, U002, U008, U019, U031, U056, U080, U112, U113, U115, U122, U123, U133, U134, U138, U140, U154, U159, U188, U197, U226 and U239.

Finally, Hoechst Celanese believes that if EPA changes its interpretation of the mixture rule, the Agency should grant a two-year National Capacity Variance for U and P listed wastes which are deep well injected.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC does not concur with the comments of BP America, Inc. (LD12-00098) that the EPA should allow capacity and deep well injection variances for wash waters from cleanup of spills of P and U wastes. First, there is no capacity data provided by BP to justify this request, which is purely an arbitrary statement. Second, the spill wash waters do not have to go to BP's NPDES facilities for discharge, so treatability is not an issue. These spill materials can be containerized and sent to offsite commercial treatment facilities. Finally, spills

should not be frequent events, and if BP Chemical Plants are experiencing frequent spills, engineering improvements should be encouraged in their process equipment, not national capacity or deep well variances that would encourage more spills to occur.

In a related comment, American Cyanamid (Docket #LD12-00087) states that they comingle P and U waste spill material with their stormwater collection system which collects spills and stormwater from other areas of their plants. They claim that this comingling results in 4 times the quantity of P and U waste that EPA has identified. They claim that the P and U spill residues cannot be isolated from the stormwater system. On the basis of not wishing to change current practices, they request the Agency to grant a national capacity variance for all P and U waste. This certainly is counter to EPA requirements regarding waste minimization. Even at that, the volumes of P and U waste generated are so low that the factor of 4 should not make a significant difference in capacity demand. This isolated comment of one company should not be taken seriously in considering granting a capacity variance, when other minor process modifications would correct their problems.

12.8 Support The D002, D003, D007, And K011/K013/K014 Deepwell Injection Wastewater Variances

Summary:

Four commenters (Monsanto Company (116); Vulcan Materials Company (128); E.I. DuPont De Nemours & Company (189); and Disposal Systems, Inc. (261)) expressed their concurrence with EPA that a capacity variance for D002 wastewaters is warranted. Amoco Corporation (240) and Disposal Systems expressed their support for the variance given to D003 wastewaters. Disposal Systems also voiced its approval for the deepwell capacity variances given to D007 wastewaters.

EPA also received five comments (BP America, Inc. (098); Monsanto Company (116); E.I. DuPont De Nemours & Company (189) BP Chemicals, Inc. (216); and AN UIC Group (219)) supporting the capacity variance for K011/K013/K014 wastewaters. BP America, Monsanto, BP Chemicals, and the AN UIC Group stated that the two years of the variance would be needed to develop and construct wet-air oxidation systems capable of meeting the treatment standards. BP America and BP Chemicals also expressed concern that the development and construction process would take longer than two years since large volumes prohibited transfer to offsite commercial treatment thus requiring the development of onsite treatment. E.I. DuPont De Nemours & Company stated that the variance would allow sufficient time for approval of its no-migration petition. The Hazardous Waste Treatment Council (HWTC) (L247) stated that EPA must not extend the capacity variance beyond two years, as mentioned by BP America.

Response:

EPA acknowledges these comments and has determined that the capacity variances are necessary due to inadequate treatment capacity for these wastes. National capacity variances cannot extend beyond two years as stated in Section 3004(h)(2) of RCRA. EPA would also like to

reiterate that upon further reevaluation, variances have been extended to the nonwastewater forms of deepwell injected D002, D003, D007, and K014 since evidence indicates that this form of these wastes is also currently deepwell injected.

Comments:

The comments relevant to this issue are presented in the following order:

- BP America, Inc. (098);
- Monsanto Company (116);
- Vulcan Materials Company (128);
- E.I. DuPont De Nemours & Company (189);
- BP Chemicals, Inc. (216);
- AN UIC Group (219);
- Amoco Corporation (240);
- Disposal Systems, Inc. (261); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

2. BP Chemicals supports EPA's determination to grant a national capacity variance for K011/K013/K014 wastewater anchored to the May 8, 1990 prohibition date.

EPA has correctly determined that adequate on-site and commercial treatment capacity does not exist to treat K011/K013/K014 wastewaters using BOAT technology and is proposing a national capacity variance for two years. BP Chemicals supports EPA's decision, though we believe a two year variance is still insufficient to complete development testing, detailed engineering, procurement and installation, and start up of a HAO treatment system. Further, permitting activities are likely to delay the implementation schedule.

It should be pointed out that the acrylonitrile producers will have to develop on-site BOAT systems, as opposed to seeking commercial treatment capacity, because the quantity of wastewater generated by a facility far exceeds what could reasonably be transported by truck or rail car. As many as 63,000 rail cars or 251,000 tank trucks would be required to transport the approximately 1.3 billion gallons of acrylonitrile wastes that are injected annually. In addition, storage tanks at the plants that are not currently available, would be required to hold wastewaters prior to being transferred to trucks or rail cars. Clearly, off-site treatment is logistically unavailable.

Docket Number: LD12-00116

Commenter: Monsanto Company

Comment:

Separate from the above considerations, Monsanto supports EPA's proposal to establish a two year National Capacity Variance for injected corrosive (D002) wastes. Monsanto operates injection wells at two locations at pHs below 6. Commercial neutralization for these large volume waste streams (50 million gallons per year at one location alone) far exceeds the 13 million gallon national capacity EPA has identified. (54 FR 48487)

CMA, in separate comments referenced earlier, has presented strenuous technical and policy arguments that should cause the Agency to drop its pursuit of "insoluble salts" as part of the BDAT requirement for D002 corrosive liquids. If the Agency persists in this requirement, even for a sub-subcategory of wastes, this will most certainly support the provision of a two year national capacity variance. New commercial capacity will be required to provide the alternative commercial neutralization. As an example, at one Monsanto facility we neutralize (without precipitating insoluble salts) acidic wastewaters totalling over 100,000,000 gal./yr. This stream alone greatly exceeds the Agency's estimate of available capacity of 36,000,000 gal./yr. (54 FR 48475). (It is probable, we suspect, that even that 36,000,000 gal./yr. capacity does not include capabilities to precipitate and handle insoluble salts.)

A National Capacity Variance for Injected K011, K013 and K014 Wastewaters is Necessary and Warranted

EPA proposes to grant a two year national capacity variance to BDAT for underground injection of K011, K013 and K014 wastewaters.

Monsanto agrees with EPA's determination that adequate capacity is not available to manage the special treatment requirements associated with BDAT treatment of K011, K013 and K014 wastewaters. All producers of acrylonitrile in the United States currently depend on underground (deepwell) injection of these wastewaters. There is no treatment capacity short of deepwell injection (including traditional wet air oxidation) currently available for the disposal of these wastewaters. Proposed BDAT limits are based on new, pilot scale technology, believed to be modifications to the more traditional wet air oxidation process. Such facilities are not currently available.

Based on the above discussion, it is essential that EPA grant the proposed two year national capacity variance to provide the time necessary to complete the development and installation of appropriate treatment facilities.

Docket Number: LD12-00128

Commenter: Vulcan Materials Company

Comment:

Neutralization Wastes

The Agency has proposed a two-year national capacity variance for the deep well injection disposal for D002 wastes. Vulcan concurs with the Agency's evaluation of the available treatment capacity for this type of waste.

Docket Number: LD12-00189

Commenter: E.I. DuPont De Nemours & Company

Comment:

- The proposed national capacity variance for D002 wastes disposed by underground injection is essential and is technically and legally justified.

Du Pont strongly supports the Agency's proposal to grant a two-year national capacity variance for D002 wastes that are disposed of by underground injection. Du Pont has several injection wells currently receiving D002 wastes for which there would be no alternate capacity available by May 8, 1990. These wells are currently the subject of "no migration" petitions under review by the appropriate Federal/State agencies. Du Pont is confident that each of these wells will receive approval to allow continued injection of these waste materials. However, our greatest concern is that the RCRA LDRs will preempt these technical decisions and potentially result in "procedural default" and premature shutdown of this environmentally protective technology. The enormous volumes that would require alternate treatment mandates that EPA finalize its proposed two-year national variance for D002 wastes.

Du Pont also strongly supports EPA's proposal to grant a two-year national variance for the K011/K013/K014 wastewater streams. We concur in the Agency's analysis that there is insufficient alternative capacity to treat these wastes. We also agree that the date from which the variance period should begin is the date on which EPA actually acts on the given wastes not on the date it was "supposed" to act based on its own schedule. Therefore, we strongly support the Agency's proposal to grant a two-year variance beginning on the date of final promulgation of this rule, i.e. May 8, 1990. The variance period will allow Du Pont sufficient time to obtain approval of its "no migration" petition filed in late 1987. We are convinced that our underground injection practices are protective of human health and the environment, and are equally confident we can demonstrate this fact to both EPA, the State of Texas and the public.

Docket Number: LD12-00216

Commenter: BP Chemicals Inc.

Comment:

BP Chemicals supports EPA's determination to grant a national capacity variance for K011/K012/K014 wastewater anchored to the May 8, 1990 prohibition date.

EPA has correctly determined that adequate on-site and commercial treatment capacity does not exist to treat K011/K013/K014 wastewaters using BDAT technology and is proposing a national capacity variance for two years. BP Chemicals supports EPA's decision, though we believe a two year variance is still insufficient to complete development testing, detailed engineering, procurement and installation, and start up of a WAO treatment system. Further, permitting activities are likely to delay the implementation schedule.

It should be pointed out that the acrylonitrile producers will have to develop on-site BDAT systems, as opposed to seeking commercial treatment capacity, because the quantity of wastewater generated by a facility far exceeds what could reasonably be transported by truck or rail car. As many as 63,000 rail cars or 251,000 tank trucks would be required to transport the approximately 1.3 billion gallons of acrylonitrile wastes that are injected annually. In addition, storage tanks at the plants that are not currently available, would be required to hold wastewaters prior to being transferred to trucks or rail cars. Clearly, off-site treatment is logistically unavailable.

Docket Number: ID12-00219

Commenter: AN UIC Group

Comment:

- V. THE GROUP SUPPORTS THE AGENCY'S PROPOSAL TO GRANT A NATIONAL CAPACITY VARIANCE FOR K011/K013/K014 WASTEWATERS.

In view of the infancy of the technology EPA has determined to be appropriate for the treatment of K011/K013/K014 wastewaters, the Group supports the Agency's conclusion that a national capacity variance is warranted for these wastes to allow time for the commercial development of the technology and the installation of the necessary treatment capacity.

Docket Number: LD12-00240

Commenter: Amoco Corporation

Comment:

Amoco supports the Agency's proposal to grant a two-year national capacity variance for several wastes which are typically disposed by underground injection, particularly for reactive sulfide wastes. This will allow additional time for the Agency to consider no migration petitions for these facilities.

12-51

Deepwell Injected Wastes

Docket Number: LD12-00261

Commenter: Disposal Systems, Inc.

Comment:

TWO YEAR NATIONAL VARIANCE

The GNI Group, Inc. supports the Agency's recommendation of a two (2) year national variance for select underground injected wastes, especially D002, D003, D007 and multi-source leachate. These wastes exist in substantial quantities and generators have no available alternative means of disposal.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

EPA must not extend the capacity variance for wastewaters requiring wet air oxidation systems beyond the two year period as suggested by BP America. These systems can be provided within the two year period by many vendors of these systems. The demand must be there to create the incentive to supply these systems.

12.9 Treatment Capacity For Deepwell Injected D004 (EP Toxic For Arsenic) Wastewaters**Summary:**

Allied Signal, Inc. (267) stated that EPA's determination that adequate chemical precipitation capacity existed for deepwell injected D004 (arsenic) was unfounded. Allied Signal stated that EPA underestimated required capacity since its facility alone generated the equivalent of roughly 1/5 of the entire EPA volume. Allied Signal requested that EPA reevaluate the capacity analysis and grant a capacity variance to deepwell injected D004. Allied Signal further informed EPA that it had filed a case-by-case extension petition since it had located adequate capacity for its D004 waste but that the enormous treatment cost made it an unreasonable option. Additionally, Allied Signal stated that it had adequate capacity in its underground injection well to dispose of the entire volume of D004 during the extension period. In closing, Allied Signal indicated that it was also awaiting a decision on its no-migration petition, and requested that EPA withhold acting on its case-by-case extension petition until after a ruling on the no-migration petition.

Response:

EPA disagrees that a capacity variance is needed for deepwell injected D004 wastewaters. EPA has identified over 300 million gallons of available chemical precipitation capacity, which is the BDAT for arsenic wastewaters. Required capacity was determined to be approximately 142.4 million gallons. Assuming EPA missed Allied Signal's volume (approximately 1.7 million gallons) in the capacity analysis, which is quite likely since no D004 was reported by any of Allied Signal's facilities in the TSDR Survey, the required volume would still be well under the volume of available treatment capacity. Further, EPA does not believe that it missed over 200 million gallons of waste requiring chemical precipitation, which would be the volume necessary to warrant a national capacity variance. If Allied-Signal still cannot locate treatment capacity for its D004 wastewaters, then Allied may want to pursue a case-by-case extension petition.

Comments:

The comment relevant to this issue is presented as follows:

- Allied-Signal, Inc. (267).

Docket Number: LD12-00267

12-55

Deepwell Injected Wastes

Commenter: Allied-Signal Inc.

Comment:

Finally, in these Comments, we request general relief (two-year national capacity variances for D004 wastes that are underground injected and for D002 wastewaters that are surface disposed) and specific relief for several of the Allied facilities. Further requests for relief will be made if and when Allied determines the need for such relief at a particular facility. The specific relief requested herein is:

- o a treatability variance for the hexafluoroarsenate-containing wastewaters at the Metropolis, Illinois Works,
- o a treatability variance for the mixed radioactive/hazardous solvent wastes currently stored at the Metropolis Works, and
- o a case-by-case extension of the effective date for the D004 wastes that are currently underground injected at the Danville, Illinois facility.

IX. The Agency Should Grant a Two-Year National Capacity Variance For D004 Wastes That Are Underground Injected

Although the proposed rules grant national capacity variances for a number of wastes that are underground injected, no such variance is granted for D004 wastes. The decision not to grant such a variance was based on the Agency's determination that adequate national capacity exists for chemical precipitation, the treatment method upon which the treatment standard for D004 wastewaters was based. 54 Fed. Reg. 48487, Table III.B.2.(c).

Allied believes that this determination of adequate capacity is erroneous and that, in fact, adequate treatment capacity may not exist for D004 wastewaters. In the background document for the development of the BDAT for D004 wastes, the Agency lists the volume of D004 generated in 1985 as being 38,538 tons.²⁷ This is certainly an underestimation of the actual volumes of D004 wastes produced, since one of Allied facility's alone produces approximately 7,200 tons per year which is currently underground injected.

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

Allied believes that this justifies a reexamination of waste volumes and required capacity for wastes that are underground injected. Until such a reexamination can be completed, Allied believes that a national capacity variance for D004 wastes that are underground injected is appropriate.

X. EPA Should Add Language To the Regulations Concerning Previously-Bevilled Wastes

Allied supports EPA's proposal to treat wastes that have been withdrawn from the protections of the so-called Bevill exclusion, 42 U.S.C. § 6921(b)(3)(A)(ii), as "newly identified wastes" for purposes of the land disposal restrictions. 54 *Fed. Reg.* 48377-78, 48492-93. However, the Agency needs to include language in the actual rule regarding this proposal. Regulated entities should not be forced to rely upon language in the preamble alone. Allied would suggest the following language:

§ 268.35 (n) The requirements of paragraphs (a) through (k) of this section do not apply to mineral processing wastes that have been withdrawn from the protections of § 3001(b)(3)(A)(ii) of RCRA. These wastes will be considered "newly identified" wastes that may continue to be land disposed until such time as the Agency promulgates BDAT treatment standards for such specific wastes.

XI. The Agency Should Grant a Case-By-Case Extension of the Effective Date For Wastes That Are Currently Underground Injected at Allied's Danville, Illinois Plant

Under the land disposal restriction program, the Agency will grant extensions of the effective date of land disposal prohibitions on a case-by-case basis. In order to obtain such an extension, a petitioner must demonstrate that adequate alternative treatment, recovery or disposal capacity for the petitioner's waste cannot reasonably be made available by the effective date due to circumstances beyond the petitioner's control.

See 54 *Fed. Reg.* 48376.

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

The applicant for a case-by-case extension must make the following demonstrations:

- o He has made a good-faith effort to locate and contract with treatment, recovery, or disposal facilities nationwide to manage his waste in accordance with the effective date;²⁷
- o He has entered into a binding contractual commitment to construct or otherwise provide alternative capacity;
- o Due to circumstances beyond the applicant's control, such alternative capacity cannot reasonably be made available by the applicable effective date. This demonstration may include a showing that the technical and practical difficulties associated with providing the alternative capacity will prevent compliance by the effective date.
- o The capacity being constructed or otherwise provided by the applicant will be sufficient to manage the entire quantity of waste that is the subject of the application;
- o He provides a detailed schedule for obtaining required operating and construction permits or an outline of how and when capacity will be available;
- o He has arranged for adequate capacity to manage his waste during an extension and has documented in the application the location of all sites at which the waste will be managed; and

²⁷ There is no requirement that the applicant be denied an extension if capacity is available; the requirement is simply for a good faith investigation of available capacity 51 Fed. Reg. 40602 (Nov. 7, 1986).

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

- o Any waste managed in a surface impoundment or landfill during the extension period will meet the requirements of §268.5(h)(2).^W

40 C.F.R. § 268.5(a).

Allied therefore hereby submits the following information as grounds for a case-by-case extension for wastes that are currently underground injected at its Danville, Illinois, facility. These wastes are approximately 1.8 million gallons per year of D004 (arsenic) wastewaters, all of which are generated as wastewaters from a process regularly performed at the facility. These wastes currently are mixed with other wastes generated at the facility prior to injection.

A. Allied Has Made A Good-Faith Effort to Locate Capacity

Allied has made numerous good-faith inquiries with waste disposal facilities nationwide to determine if adequate capacity exists to dispose of its D004 wastewaters. Allied has determined that capacity exists, but that the enormous costs of utilizing such capacity make it unreasonable to rely on such capacity. (See discussion in C. below.)

B. Allied Has A No-Migration Variance Request Pending With EPA Region V

Allied submitted a revised request for a No-Migration variance with EPA Region V on September 5, 1989. Allied has been informed by a letter dated November 21, 1989, that the Region "intends to issue a draft decision in February 1990" on Allied's request.^W Allied submits that a draft decision granting the No-Migration variance request should be considered to be the equivalent of a contractual commitment to construct or otherwise provide alternative capacity. If the variance request is ultimately

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

granted, as Allied believes is fully justified by the information presented in the variance request, alternative capacity will, in effect, have been provided since the wastes will no longer be subject to the land disposal prohibitions. A draft decision granting the variance is the operational equivalent of a contractual commitment to provide alternate capacity. Each will result in the provision of alternative capacity if the reasonable expectations based on the contractual commitment or based on the draft grant of the variance are fulfilled. The No-Migration variance will provide for capacity for the disposal of all of the D004 wastewaters generated at the facility.

Although Allied cannot say for certain when its variance request will be acted upon by the Region, Allied commits to inform those persons within the Agency charged with acting upon this extension request promptly after the Region renders its draft decision. Given the high likelihood that the Region will render its draft decision shortly, we urge EPA to withhold action on this request for a case-by-case extension until we inform the Agency of the Region's draft decision.

* Letter from Edward P. Watters, Chief of Underground Injection Control Section, U.S. EPA Region V, to Donald M. Phillips, Plant Manager, Allied Danville Works, November 21, 1989. The fact that EPA is very close to issuing a draft decision was also confirmed in a letter dated December 22, 1989, from Mr. Watters to William C. Child, Illinois EPA (the Region has "nearly completed its review" and expects "to issue the draft decision in the near future").

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

C. Alternative Capacity Cannot Reasonably Be Made Available By The Effective Date

In determining whether capacity can reasonably be made available by the effective date, the Agency will consider economic factors. 51 *Fed. Reg.* 40603 (Nov. 7, 1986).⁴ In the case of the Darville facility's wastes, economic factors make reliance on the available capacity infeasible.

Allied has obtained quotations of disposal costs from two waste disposal facilities. The lowest cost quoted is approximately \$2 million per year. This cost is for transportation to and disposal at the Chemical Waste Management facility in Newark, New Jersey. A quote of \$2,076,000 per year was received from American Nukem in Detroit, Michigan.

⁴ In promulgating 40 C.F.R. § 268.5, EPA stated:

Several commenters stated that the legislative history allows EPA to consider economic factors in evaluating requests for case-by-case extensions. The Agency agrees that the statutory language can be construed to allow an applicant to show that it would not be feasible to use existing capacity. Although the legislation as enacted did not include House of Representatives language expressly providing a variance based on "severe economic hardship," the conference report did add language allowing for a demonstration that adequate alternative capacity cannot "reasonably" be made available by the effective date. Therefore, in making its determinations concerning the availability of such alternative capacity, EPA will consider the feasibility of providing alternative capacity during the period of the requested extension in order to determine whether capacity is reasonably available. The determination of feasibility may involve consideration of the technical and practical difficulties associated with providing alternative capacity.

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

The cost of continuing to underground inject the D004 wastes at the Danville facility is approximately \$125,000 per year. The enormous costs of sending the D004 wastes off-site for disposal, particularly in light of the costs of on-site injection, makes it unreasonable to use such off-site capacity.

D. Allied Has Adequate Capacity to Dispose of These Wastes During the Extension Period

Allied has adequate capacity in its underground injection well to dispose of all the D004 wastes generated by the Danville facility during the extension period.

Based on the above factors, Allied respectfully requests that the Agency grant an extension of the effective date of land disposal prohibitions for D004 wastewaters for the Danville facility.

XII. Summary of Requests for Treatability Variances and Case-By-Case Extensions

Allied requests the following site-specific treatability variances and case-by-case extensions in these Comments:

- o a treatability variance for the hexafluoroarsenate-containing wastewaters at the Metropolis, Illinois Works (see discussion pages 45-53),
- o a treatability variance for the mixed radioactive/hazardous wastes currently stored at the Metropolis Works (see discussion pages 56-57), and
- o a case-by-case extension of the effective date for the D004 wastes that are currently underground injected at the Danville, Illinois facility (see discussion pages 63-68).

Docket Number: LD12-00267 (continued)

Commenter: Allied-Signal Inc.

Comment: (continued)

Allied will serve copies of these Comments on the Environmental Defense Fund, the Natural Resources Defense Council, and the Hazardous Waste Treatment Council at the time the Comments are filed with the Agency. Allied has been informed by EPA that this will serve as adequate notice of the specific requests for relief. In addition, in order to perfect our specific requests for relief, Allied will make formal submissions of the individual requests to the Agency in the near future.

**12.10 Capacity Is Unavailable For Certain Deepwell Injected D010 (EP Toxic For Selenium)
Wastewaters Since Proposed Treatment Cannot Meet The Standard**

Summary:

Bethlehem Steel Corporation (045) informed EPA that certain streams occasionally exhibiting the characteristic of EP Toxicity for selenium (D010) could not meet the treatment standard. Bethlehem Steel stated that waste ammonia liquor (WAL) could not be effectively treated by chemical precipitation which was prescribed for selenium wastes. Up until now, the liquor has been processed through wastewater clarifiers to remove any tar and then cooled and filtered to remove any solids prior to injection. Bethlehem Steel requested a capacity variance for this waste due to the inability to meet the standard. The Hazardous Waste Treatment Council (HWTC) (L034 and L247) and ThermalKEM/CyanoKEM (NUKEM)(L031) disagreed with Bethlehem Steel's request, based on the belief that the waste stream is treatable to the BDAT standard, and provided treatment data

Response:

The inability of a specific waste stream to reach a treatment standard does not warrant a national capacity variance. EPA bases its national capacity variance determinations on the availability of treatment capacity. EPA has data indicating that sufficient chemical precipitation capacity is available to treat D010 wastewaters. Consequently, EPA is not granting D010 wastewaters a national capacity variance. If Bethlehem Steel believes that its waste is significantly different than that used to determine BDAT, then Bethlehem Steel may wish to pursue a treatability variance.

Comments:

The comments relevant to this issue are presented in the following order:

- Bethlehem Steel Corporation (045);
- ThermalKEM/CyanoKEM (NUKEM)(L031);
- Hazardous Waste Treatment Council (HWTC) (L034); and
- Hazardous Waste Treatment Council (HWTC) (L247).

Docket Number: LD12-00045

Commenter: Bethlehem Steel Corp

Comment:

A selenium-containing wastewater (D010) currently generated at a Bethlehem plant is disposed of via deepwell injection. This wastestream falls within the scope of these regulations for which EPA did not propose to grant a national capacity variance.

Bethlehem's Burns Harbor Plant (EPA ID No. INDO03913423) generates waste ammonia liquor (WAL) from coke oven gas cleaning operations. On occasion, WAL exhibits the characteristic of EP Toxicity for Selenium. (See Attachment 1 for a typical analysis.) This waste is discharged through NPDES-permitted injection wells (NPDES Permit No. IN 0000175, Outfalls 006 and 007). These two wells are also permitted under Underground Injection Control (UIC) Permit Numbers IN-127-1W-0003 and IN-127-1W-0004. Prior to injection, WAL is processed through wastewater clarifiers to remove any tar, cooled and filtered to remove suspended solids (Attachment 2).

Bethlehem supports EPA's determination (page 48430) that arsenic and selenium typically exist in aqueous conditions as oxo-anions and do not exhibit the cationic behavior like other metals. However, Bethlehem does not agree that all oxo-anions of selenium and arsenic can be removed by use of the same treatment technology, (i.e., chemical precipitation) identified as BDAT in the proposed rules for all selenium and arsenic species. Bethlehem has performed treatability studies on its WAL and the results show that chemical precipitation technique using ferric chloride, calcium hydroxide, aluminum, ferrous ions and sodium sulfide to remove selenium from WAL is not effective. Attachment 3 provides a summary of the results of these treatability studies.

Therefore, it is clear to Bethlehem that the chemical precipitation technique proposed by EPA as BDAT for removal of selenium in wastewaters will not be effective for WAL wastewaters. Since WAL wastewaters contain a variety of organic and inorganic compounds, Bethlehem believes that a new series of experiments is needed to identify and develop a feasible treatment technology for selenium in such wastewaters. A literature search has shown that in light of the complex selenium chemistry and unknown oxidation state of selenium in WAL, other treatment technologies such as adsorption using a metal hydroxide complex, biological oxidation, incineration and thermal evaporation are potentially viable technologies. Our own studies have shown that biological oxidation following ammonia stripping is an effective technology for removing selenium from WAL.

In Table III.B.2.(c) (page 48485), EPA states that adequate chemical precipitation capacity is nationally available to treat wastewaters containing selenium. As noted above, the proposed chemical precipitation technology does not work in the case of chemically complex WAL and, therefore, nationally available capacity identified by EPA cannot be utilized by Bethlehem. Moreover, Bethlehem believes that any potential treatment technology must be installed on-site because of the large volume of wastewaters generated (i.e., 250,000 gallons per day). Trucking WAL to an outside treatment facility is not an economically or physically feasible solution for large quantity wastewaters. For example, at the current generation rate of about 250,000 gallons per day, Bethlehem would require about 50 5000-gallon capacity trucks daily to haul this wastewater to an off-site treatment facility.

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Deepwell Injected Wastes

Docket Number: LD12-00045 (continued)

Commenter: Bethlehem Steel Corp

Comment: (continued)

In summary, Bethlehem believes that chemical precipitation, proposed by EPA as BDAT for selenium removal from D010 wastewaters, is not a viable technology for the WAL generated by its Burns Harbor Plant. Bethlehem strongly recommends that EPA grant a two-year capacity variance for Burns Harbor's selenium-containing WAL wastewaters that are currently being deep-well injected in order to allow time for identification and implementation of appropriate treatment technology.

Docket Number: LD12-L0031

Commenter: ThermalKEM/CyanoKEM (NUKEM)

Comment:

VI. Comments on D010 Waste Selenium (Bethlehem Steel Corporation LD12-00045)

Bethlehem Steel requests a capacity variance for D010 wastewater containing ammonia as high as 5000 PPM. While it is true that the ammonia makes the D010 wastewater more difficult to treat for selenium, we feel that a treatability variance is not justified here based on the data submitted and neither is a capacity variance justified. Bethlehem Steel comments show treatment to a level of as low as 1.4 mg/L, well within EPA's proposed BDAT standard of 5.2 mg/L. Bethlehem identified in their comments that they already have settling capability in the form of clarifiers. We believe that adding a soluble ferric salt (i.e., ferric sulfate) in an acidic pretreatment step with agitation (i.e., pH 2 to 3 for about 1 hour) followed by lime neutralization to pH 7 to 8 in a separate reaction tank prior to clarification will treat the selenium to less than 2.0 mg/L which is less than EPA's proposed standard of 5.2 mg/L. This would fulfill the mandate of the LDR program to treat waste to the maximum extent feasible.

We have submitted extensive data and comments on the proposed BDAT for arsenic and selenium wastewaters (see Docket No. 00044). Our company incinerates waste containing arsenic and selenium as minor constituents. The water from the scrubber is treated in an on-site permitted continuous wastewater treatment plant. The permit for this plant limits arsenic and selenium levels in wastewater to less than 1 ppm. To maintain compliance with this limit a strong reducing agent is used during the acidic pretreatment of the wastewater treatment process, to reduce the selenium to the metallic element removable as an insoluble colloid. Further additions of polymer or iron and pH adjustments using conventional treatment technologies result in less than detectable concentrations of selenium in wastewater. This demonstrates that there are practical alternate treatment methods for removal of selenium.

Carbon adsorption should also be installed prior to injection of the water from Bethlehem Steel Corporation, as it contains high levels of phenols, aromatics and naphthalene.

Docket Number: LD12-L0034

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

J. Comments On Selenium Waste (D010)
(Bethlehem Steel Corporation LD12-00045)

Bethlehem Steel requests a capacity variance for D010 wastewater containing ammonia as high as 5000 PPM. While it is true that the ammonia makes the D010 wastewater more difficult to treat for selenium, based on the data submitted neither a treatability or capacity variance justified. Bethlehem Steel comments show treatment to a level of as low as 1.4 mg/liter, well within EPA's proposed BDAT standard of 5.2 mg/liter. Bethlehem identified in their comments that they already have settling capability in the form of clarifiers. Adding an equalization tank and a mixing tank would be all that is required to polish the remaining selenium as described below prior to deep well injection, or other form of land disposal.

One of our member companies submitted extensive data comments on the proposed BDAT for arsenic and selenium wastewaters (see Docket No. 00044). This company incinerates waste containing arsenic and selenium as minor constituents. The water from the scrubber is treated in an on-site permitted continuous wastewater treatment plant. The permit for this plant limits arsenic and selenium levels in wastewater to less than 1 ppm. To maintain compliance with this limit a strong reducing agent is used during the acidic pretreatment of the wastewater treatment process, to reduce the selenium to the metallic element and remove it as an insoluble colloid. Further additions of polymer or iron and pH adjustments using conventional treatment technologies result in less than detectable concentrations of selenium in wastewater. This demonstrates that there are practical alternate treatment methods for removal of selenium.

Carbon absorption should also be installed prior to injection of the water, as it contains high levels of phenols, aromatics and naphthalene.

Docket Number: LD12-L0247

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

The HWTC has also submitted comments on February 20, 1990 regarding the Bethlehem Steel Corporation selenium bearing waste stream (see HWTC comments, page 17 and 18). These comments address the treatability issues raised by Bethlehem Steel. We object to the economic arguments raised by Bethlehem Steel in arguing for a capacity variance. Our treatability comments offered practical solutions to their on-site treatment problems, that would make transportation of the waste to off-site commercial facilities unnecessary. Even at that, economics at one plant is not a criterion for granting national capacity variances.

12.11 U115 (Ethylene Oxide) Wastewaters Are Deepwell Injected And Require A Variance**Summary:**

Two commenters stated that U115 wastewaters are undergoing deepwell injection contrary to EPA's belief. Hoechst Celanese Corporation (047) stated that ethylene oxide must be quickly diluted should it become unstable during production due to its extreme fire/explosion potential. To dilute the gas, the commenter needed to utilize 4 million gallons of pond water for a worst case scenario. The U115/water mixture was then deepwell injected. Due to the large volumes generated and the unpredictability of generation, the commenter stated that offsite treatment was unfeasible and requested a capacity variance. The Chemical Manufacturers Association (CMA) (L007H) submitted data from an injection well survey indicating that the waste had been deepwell injected.

Response:

EPA has evaluated this information on U115 and agrees that wastewaters are deepwell injected. EPA has data indicating that sufficient incineration capacity is available to treat the volume of these wastewaters. Therefore, EPA is not granting a national capacity variance for deepwell injected U115 wastewaters. EPA realizes that generation of this waste is sporadic and often in large volumes. If Hoechst Celanese cannot obtain treatment for this waste, it may want to pursue a case-by-case extension.

Comments:

The comment relevant to this issue is presented as follows:

- Hoechst Celanese Corporation (047); and
- Chemical Manufacturers Association (CMA) (L007H).

Docket Number: LD12-00047

Commenter: Hoechst Celanese Corporation

Comment:

Ethylene Oxide (U-115) is a waste which is currently underground injected.

Table III.B.2(a), on page 48486 of the proposed rule, lists wastes which EPA believes are not underground injected. Ethylene Oxide (U-115) waste is listed in Table III.B.2(a). Hoechst Celanese wishes to inform EPA that the U listed waste (U-115) Ethylene Oxide is currently injected in the Hoechst Celanese Chemical Group, Inc., Clear Lake Plant underground injection wells.

Hoechst Celanese Chemical Group, Inc. operates an Ethylene Oxide production facility at the Clear Lake Plant. Because of the extreme fire/explosion potential of Ethylene Oxide, the Clear Lake Plant had to develop a method of handling Ethylene Oxide should the material become unstable during production, storage and/or loading operations. Hoechst Celanese researched several methods of handling large quantities of Ethylene Oxide in the event there occurred a threat of a fire or an explosion. The method chosen was to rapidly dilute the Ethylene Oxide in a large quantity of water in a remote area of the plant. This procedure allows the plant, in an emergency situation, to rapidly remove the Ethylene Oxide from the operations area and significantly reduce the fire and explosion potential.

To provide adequate dilution capacity, a 4,000,000 gallon pond of water (fire water and cooling tower blowdown) is maintained on site. This "emergency dump" pond is sufficient for the emergency dumping of the largest volume of Ethylene Oxide stored at the plant. Should an unstable situation occur, the Ethylene Oxide can be rapidly flushed with large quantities of fire water, routed to the emergency dump pond and dispersed throughout the pond via a sparger system.

Since the use of the Ethylene Oxide emergency dump pond is an essential part of safe production, storage, and loading of this material, Hoechst Celanese applied for a variance from the minimum technology requirements for the Ethylene Oxide emergency dump pond. As a condition of this variance, the Clear Lake Plant must flush

the Ethylene Oxide contaminated wastewater from the emergency dump pond within seven days until the remaining water contains no more than 1.0 ppm Ethylene Oxide. The contaminated wastewater removed from the pond during this flushing process is disposed of via onsite underground injection wells. Therefore, contrary to the listing in Table III.B.2(a), Ethylene Oxide (U-115) is currently being disposed of via underground injection.

Docket Number: LD12-00047 (continued)

Commenter: Hoechst Celanese Corporation

Comment: (continued)

2. Underground Injection is the only feasible method of disposing of the waste stream.

Off-site disposal of the Ethylene Oxide contaminated wastewater is not possible. The generation of this waste stream is infrequent and unpredictable. Depending on the amount of flushing required to meet the 1.0 ppm Ethylene concentration level, between 4,000,000 and 8,000,000 gallons of wastewater is generated. To transfer this material to an off-site disposal facility would require twenty-eight to fifty-six railroad tank cars per day or 112 to 224 tank trucks per day for the seven days allowed to remove the wastewater from the emergency dump pond. This translates into 196 to 392 total tank cars or 784 to 1568 tank trucks. Since this situation develops as an emergency, no advance preparation can be made to have this number of tank cars or tank trucks available. Even if arrangements could be made to find this number of transport vehicles, the Clear Lake Plant could not handle loading these in a safe, environmentally sound manner. Additionally, without substantial advanced notice, no off-site facility could handle the waste in the time required.

3. Hoechst Celanese requests that EPA grant a two-year capacity variance for the underground injection of Ethylene Oxide.

As described above, the use of the emergency dump pond is essential to the safe operation of the Clear Lake Plant. The emergency use has only been required three times in the last five years as a result of power failures and/or hurricanes. The off-site transfer of the contaminated wastewater would not be possible and an offsite disposal facility could not accept this quantity of waste without significant advanced notice.

Hoechst Celanese has prepared a no migration petition for the continued use of the Clear Lake Plant injection well system. The petition is in final stages of approval by the Texas Water Commission and will soon be forwarded to the EPA for their review. Hoechst Celanese anticipates that the petition will be approved by May 8, 1990. Approval of the no migration petition by May 8, 1990 will eliminate the concern for available on-site disposal of the Ethylene Oxide contaminated in the Clear Lake Plant deep well injection system.

If the no migration petition is not approved by May 8, 1990, Hoechst Celanese would have no mechanism to ensure the safe operation of the facility while maintaining compliance with the variance from minimum technology requirements granted by EPA. To ensure that this situation does not occur and because off-site disposal is not possible, Hoechst Celanese requests that EPA grant a two-year capacity variance for the onsite underground injection of Ethylene Oxide at the Clear Lake Plant.

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Deepwell Injected Wastes

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association (CMA)

Comment:

Hazardous Wastes Injected By All Wells

Waste Code	1981 Volume (gallons)	1982 Volume (gallons)	1983 Volume (gallons)	1984 Volume (gallons)
D001	154,000,000.	47,600,000.	86,800,000.	98,500,000.
D002	2,480,000,000.	2,070,000,000.	2,330,000,000.	2,380,000,000.
D003	388,000,000.	305,000,000.	220,000,000.	144,000,000.
D007	169,000,000.	158,000,000.	128,000,000.	7,900,000.
F002	25,300,000.	13,700,000.	11,400,000.	12,200,000.
F003	31,600,000.	27,000,000.	21,700,000.	22,600,000.
F004	68,700,000.	37,200,000.	30,900,000.	33,100,000.
F005	21,100,000.	3,660,000.	3,350,000.	0.
K009	69,100,000.	37,100,000.	38,500,000.	38,000,000.
K010	2,240,000.	1,880,000.	326,000.	1,950,000.
K011	590,000,000.	779,000,000.	801,000,000.	999,000,000.
K013	372,000,000.	369,000,000.	356,000,000.	384,000,000.
K014	1,580,000.	1,740,000.	2,380,000.	1,480,000.
K019	0.	0.	158,000.	57,900.
K023	68,700,000.	37,200,000.	30,900,000.	33,100,000.
K030	1,330,000.	537,000.	0.	0.
K033	7,000,000.	7,000,000.	41,900,000.	7,000,000.
K083	23,400,000.	12,800,000.	10,600,000.	10,500,000.
K104	117,500,000.	49,000,000.	40,750,000.	43,500,000.
P024	2,630,000.	2,630,000.	2,630,000.	4,660,000.
U001	7,900,000.	0.	0.	0.
U019	78,600,000.	66,200,000.	41,000,000.	0.
U041	58,500,000.	54,000,000.	72,800,000.	0.
U115	11,000,000.	16,000,000.	16,000,000.	14,000,000.
U122	1,050,000.	1,580,000.	946,000.	946,000.
U134	0.	11,100,000.	11,100,000.	20,800,000.
U188	19,500,000.	18,000,000.	24,200,000.	0.
U197	0.	0.	0.	12,300,000.
U211	3,830.	1,990.	1,390.	0.
Other	38,500,000.	11,600,000.	14,900,000.	2,140,000.
TOTAL	4,808,233,830.	4,138,528,990.	4,338,241,390.	4,271,733,900.

12.12 Disagreement With The D002 And D003 Wastewater Variances**Summary:**

One commenter disagreed with the capacity variances for D002 and D003 wastewaters and two commenters disagreed with the capacity variance for D003 wastewaters. RECONTEK (003) responded that recycling D002 and D003 for their metal value would be desirable and would render the waste non-hazardous, negating the need for a capacity variance. The Hazardous Waste Treatment Council (HWTC) (172) disagreed with the variance for D003 wastewaters indicating that these wastes are easily treated and that 400 million gallons per year of capacity was available and expandable. As an alternative, the HWTC proposed that only cyanide wastewaters greater than 1000 ppm be restricted from injection and that the variance be granted to only the more dilute cyanide wastewater. Exxon Chemical Company (249) mentioned that ten mobile D003 (reactive sulfide) waste treatment units exist, and that these units can provide 330 million gallons per year of chlorine dioxide treatment. Exxon also stated that this capacity could be tripled to nearly one billion gallons per year within six months.

Response:

EPA disagrees that capacity variances are unnecessary for deepwell injected D002 and D003 wastewaters. EPA has determined that there is not enough alkaline chlorination or deactivation capacity for deepwell injected D003, or neutralization capacity for deepwell injected D002, and is promulgating two-year national capacity variances for both D002 and D003 wastewaters and nonwastewaters. In response to RECONTEK, determinations regarding the need for national capacity variances are based on an analysis of the availability of the technologies that specified. Capacity analyses for these wastes and associated treatment technologies indicate that there is inadequate treatment capacity, thereby warranting two-year national capacity variance for these wastes.

The Hazardous Waste Treatment Council (HWTC) claimed to have identified over 400 million gallons of treatment capacity for deepwell injected D003, but provided no data on the type of technology or who possessed it. EPA, therefore, could not further evaluate this capacity. Finally, in response to Exxon Chemical Company, though EPA is interested in future treatment capacity, EPA only considers existing capacity when determining whether there is sufficient available treatment as of May 8, 1990. EPA has identified over one billion gallons of deepwell injected D003 (reactive sulfide) requiring treatment and has determined that a national capacity variance is warranted due to insufficient existing treatment capacity.

Comments:

The comments relevant to this issue are presented in the following order:

- RECONTEK (003);
- Hazardous Waste Treatment Council (HWTC) (172); and
- Exxon Chemical Company (249).

Docket Number: LD12-00003

Commenter: RECONTEK

Comment:

RECONTEK strenuously objects to any modification of the derive from rule. It is the company's opinion and past experience of its executives that attempts to delist or deregulate the derived products from the treatment of hazardous wastes only results in the creation of potential superfund sites. Further, in the matter of metal bearing waste residues specifically from D002 and D003 wastes, we believe that no exemption should be granted since all of these materials can be recycled for their metal values. Once the metal values have been recycled, there is no longer a reason to consider the wastes hazardous because its characteristic content, the heavy metals, have been removed.

Docket Number: LD12-00172

Commenter: Hazardous Waste Treatment Council (HWTC)

Comment:

2. UIC Variance For D003 Cyanide Wastewaters

EPA should not allow the capacity variance for D003 cyanide wastewaters, as these are easily treatable and member companies have over 400 million gallons per year capacity for these wastes that is easily expandable. As an alternative EPA should restrict the more concentrated cyanide wastewaters, greater than 1000 ppm from deepwell injection effective May 8, 1990, and allow the capacity variance to be applied for only the more dilute cyanide wastewater. This type of phased approach would be more protective of the environment and would provide more incentive to develop capacity to phase out the deepwell injection of these highly toxic wastes.

Docket Number: LD12-00249

Commenter: Exxon Chemical Company

Comment:

D. The Exxon/Rio Linda Technology Is Available to Treat Large Waste Volumes.

According to the EPA proposal, more than 1.6 billion gallons of reactive sulfide wastes require treatment each year. 54 Fed. Reg. 48486.

A considerable number of Exxon/Rio Linda treatment units already exist. There are currently 10 mobile units of a capacity similar to the unit from which data was collected for the BDAT submittal conducting commercial operations within the continental U.S.A. If all of these units were used to remediate sulfide wastes a total of 1.1 million gallons could be processed in a 10-hour day or 330 million gallons in a 300-day working year. Additional units and operating personnel would be added as market conditions warrant.

Exxon and Rio Linda estimate that additional alkaline chlorination units could be manufactured in quantity and brought on line within a six-month lead time. The short-term constraint, accordingly, is not the availability of units, but the world-wide supply of the feedstock chemicals needed to generate the chlorine dioxide. Because of supply constraints, we do not think that capacity could be more than tripled within the next year. With a tripling of capacity, approximately one billion gallons of reactive sulfide wastes could be treated under the assumptions set out above.

12.13 No-Migration Petitions For UIC Facilities And Third Third Effective Ban Dates**Summary:**

EPA received several comments concerning the review of no-migration petitions for Class I hazardous injection wells. Some commenters requested that EPA provide regulatory relief for deepwell injection facilities that had submitted petitions that would not be acted upon by upcoming ban dates (U.S. Ecology (226), Allied Signal (267), and Monsanto (279)). American Cyanamid (087) mentioned that in the event of disapproval of its pending no-migration petition, adequate treatment capacity would not be available by the Third Third deadline. They also believed that EPA was allowed under RCRA 3004(g)(5) to provide an adequate amount of time for compliance in order to prevent procedural default should the petition not be acted upon in time.

Allied-Signal also requested that EPA withhold acting on the submitted case-by-case extension petition until a ruling was made on its no-migration petition. In addition, Gibraltar Chemical Resources, Inc. (264) informed EPA that its no-migration petition had received final approval by Region VI.

Response:

EPA acknowledges these comments and concerns of operators with pending no-migration petition decisions. Although promulgation of the Third Third rule will critically affect the management of large volumes of wastes disposed of by injection wells, final EPA action on submitted petitions will not be addressed in this rulemaking. The EPA Regions have been delegated the authority to make decisions regarding no-migration petitions for Class I hazardous waste injection wells, and are fully committed to completing reviews of technically sound petitions in a timely manner. EPA has acted to provide substantial resources and technical assistance to expedite the process to complete decisions prior to the appropriate RCRA prohibition dates.

However, EPA also acknowledges that in order to realistically meet the treatment requirements for the Third Third rule, facilities with injection wells will need time to make adjustments to waste management practices involving retooling, repiping, and development of transportation networks at each plant operation facility. EPA has relied on such logistic factors in prior rulemakings to determine when capacity is realistically available. Therefore, EPA is providing a six month extension beyond the May 8, 1990, statutory prohibition for all Third Third wastes disposed at on-site injection facilities. EPA also notes that some of these same logistic factors apply to all land-disposed facilities, including off-site commercial injection facilities, and is providing a three month extension for affected facilities to determine what their compliance obligations are, and make necessary process changes, retrofit existing equipment and treatment systems, and utilize treatment capacity. However, wastes subject to any extension of the effective dates must be in compliance with the California list prohibitions, if applicable.

Comments:

The comments relevant to this issue are presented in the following order:

- American Cyanamid Company (087);
- BP America, Inc. (098);
- U.S. Ecology (226);
- Gibraltar Chemical Resources, Inc. (264);
- Allied-Signal, Inc. (267); and
- Monsanto Company (279).

Docket Number: LD12-00087

Commenter: American Cyanamid Company

Comment:

One of American Cyanamid's principal concerns is the timing of prohibitions for injected D002 and D003 and P and U coded wastes. On June 20, 1988 we submitted a "no migration" petition to the Agency to be allowed to safely continue injecting these waste streams. The approval process has evolved slowly, and even though we submitted over 18 months ago and have continued to work with the Agency to resolve issues to move the process forward, we are concerned that EPA procedural difficulties may prevent final Agency action before the May 8, 1990 "hard hammer" deadline. Should this situation occur, we will be faced with a situation which may result in an inability to properly dispose of our waste. Treatment capacity adequate to handle these wastes cannot be brought on-line between now and May 8, 1990. Even if such capacity could be established in this short time-frame, the capital investment would be enormous and ultimately unnecessary should our petition be approved as expected. American Cyanamid believes that RCRA §3004 (g) (5) offers the Agency the flexibility to provide an adequate amount of time to process these petitions, and that this flexibility should be used to prevent procedural default.

12-82

Deepwell Injected Wastes

Docket Number: LD12-00098

Commenter: BP America, Inc.

Comment:

The BP Chemical deep well "no migration" petitions demonstrating that the injection wells are protective of human health and the environment include these washwaters. These petitions have been in the review process for 1 to 2 years. There is continuing uncertainty about the ability to complete the review process prior to the prohibitions. We feel certain that the petitions will be approved and have acted in good faith to obtain timely approval. The risk of continued injection of these washwaters is low, it seems unwarranted to require alternative solutions to be developed for the short interim period prior to petition approval.

Docket Number: LD12-00226

Commenter: U.S. Ecology

Comment:

US Ecology requests that the agency prepare a formal regulatory flexibility analysis for the proposed regulations with regard to deepwell injection facilities. The request is supported by the fact that the Agency has not acted on most of the No Migration Petitions that have been submitted in a timely manner. It is not anticipated that the Agency will act on the petitions prior to the May 8, 1990 regulatory deadline, which will thereby result in the cessation of injection activities for those affected wastes, potentially millions of gallons. Also, it is doubtful EPA will review all the No Migration Petitions within two years. What will happen when the proposed variance runs out? US Ecology requests that the Agency permit Deepwell Injection of waste at those facilities where No Migration petitions were submitted, and the Agency has not yet reviewed and acted upon them.

Docket Number: LD12-00264

Commenter: Gibraltar Chemical Resources, Inc.

Comment:

Gibraltar Chemical Resources, Inc. is a commercial hazardous waste treatment and disposal facility located near Winona, Texas. Gibraltar operates a Class I underground injection well in addition to solvent reclamation and waste-derived fuel blending operations at this site. Gibraltar recently received approval its "no-migration" petition which it submitted pursuant to the provisions found at 40 CFR Part 148.20. Under this exemption, Gibraltar is authorized to inject all wastes currently identified as hazardous under RCRA with the exception of PCB containing wastes and wastes containing certain isomers of dioxin.

Docket Number: LD12-00267

Commenter: Allied-Signal Inc.

Comment:

B. Allied Has A No-Migration Variance Request Pending With EPA Region V

Allied submitted a revised request for a No-Migration variance with EPA Region V on September 5, 1989. Allied has been informed by a letter dated November 21, 1989, that the Region "intends to issue a draft decision in February 1990" on Allied's request.^{*} Allied submits that a draft decision granting the No-Migration variance request should be considered to be the equivalent of a contractual commitment to construct or otherwise provide alternative capacity. If the variance request is ultimately granted, as Allied believes is fully justified by the information presented in the variance request, alternative capacity will, in effect, have been provided since the wastes will no longer be subject to the land disposal prohibitions. A draft decision granting the variance is the operational equivalent of a contractual commitment to provide alternate capacity. Each will result in the provision of alternative capacity if the reasonable expectations based on the contractual commitment or based on the draft grant of the variance are fulfilled. The No-Migration variance will provide for capacity for the disposal of all of the D004 wastewaters generated at the facility.

Although Allied cannot say for certain when its variance request will be acted upon by the Region, Allied commits to inform those persons within the Agency charged with acting upon this extension request promptly after the Region renders its draft decision. Given the high likelihood that the Region will render its draft decision shortly, we urge EPA to withhold action on this request for a case-by-case extension until we inform the Agency of the Region's draft decision.

^{*} Letter from Edward P. Watters, Chief of Underground Injection Control Section, U.S. EPA Region V, to Donald M. Phillips, Plant Manager, Allied Danville Works, November 21, 1989. The fact that EPA is very close to issuing a draft decision was also confirmed in a letter dated December 22, 1989, from Mr. Watters to William C. Child, Illinois EPA (the Region has "nearly completed its review" and expects "to issue the draft decision in the near future").

12-86

Deepwell Injected Wastes

Docket Number: LD12-00279

Commenter: Monsanto Company

Comment:

As you know, many of the RCRA wastewaters must have BDAT established by next May 8th or they will be automatically prohibited from continued injection under the so-called "hammer" provision of HSWA. Similarly, if BDAT is established, continued injection without such treatment would be banned unless a two year National Capacity variance is granted (based on lack of commercial availability of the designated technology). Operators would then have two years to install treatment.

As an alternative to treatment, the Agency's UIC rules provide for a "no migration petition" for continued injection of untreated wastewater where protective geology exists. These petitions have been submitted, but we are increasingly concerned about the slow pace of review and dealing with differences between the applications and draft guidance (which came out only recently, long after most applications were in). Serious doubts exist as to whether the exercise will be completed by next May.

The purpose of my call was to alert you to this serious potential disruption should the petitions not be granted or BDAT and a 2 year capacity variance not be established on time. Several of our major plants and dozens more in the Chemical Industry would be in instant non-compliance or face a shut-down.

Even if BDAT is established and the capacity variance is granted, we will be in an difficult position of not knowing whether to begin spending millions of dollars (literally over \$100 million on one of our plants) to attempt BDAT or await the outcome of the petition review.

We are working the issue up through the Office of Drinking Water where an industry group has a meeting scheduled late this month. I am concerned however with the urgency of this matter, and wanted to give you early warning of its seriousness.

The only solution I can identify would be to beef up the resources the Regions are devoting to the review. In many cases, technical review is being done by the States, and the Region has not yet received the applications. Parallel and simultaneous consideration by both agencies is vitally needed.

12.14 Scrubber Water Blowdown Water Cannot Meet Any Of The Treatment Standards And Requires Either Of Two Possible Variance Scenarios, A Separate Treatability Group, Or Approval Of A No-Migration Petition

Summary:

Chemical Waste Management, Inc. (CWM) (L015) related that as a result of the waste code carry through principle, scrubber water blow down water from the incineration of wastes would not pass any of the treatment standards. Because of this situation, CWM requested that either: (1) a nationwide capacity variance be granted for incinerator water blowdown water containing any restricted waste; or (2) a nationwide capacity variance be granted for incinerator water blowdown water containing any of a specified list of waste codes; or (3) EPA establish a separate treatability subcategory for incinerator water blowdown water with standards based on the performance of the CWM's facility; or (4) approve the CWM's no-migration petition.

Response:

The inability of a specific waste stream to reach a treatment standard does not warrant a national capacity variance. EPA bases national capacity variance determinations on availability of the specified treatment for the particular waste. In addition, a separate treatability group has not been provided by EPA. EPA has determined that short-term relief to CWM would be best provided by approval of their submitted no-migration petition for their injection well. The petition for CWM's Port Arthur, Texas, facility is being reviewed by EPA region VI. EPA has indicated to CWM that EPA intends to make a timely decision on this petition. On February 16, 1990, EPA issued a preliminary notice of approval and held a public hearing on the petition for public comments in Port Arthur, Texas on March 20, 1990. The comment period closed on April 2, 1990, and final EPA action on the CWM Port Arthur petition is imminent.

12-88

Deepwell Injected Wastes

Comments:

The comment relevant to this issue is presented as follows:

- Chemical Waste Management, Inc. (CWM) (L015).

Docket Number: LD12-L0015

Commenter: Chemical Waste Management, Inc. (CWM)

Comment:

Fed. Reg. at 26,642 (June 23, 1989). Our letters explained that as a result of the "waste code carry through principle," Port Arthur's blowdown water would carry all of the codes of the wastes that were incinerated. This means that contrary to EPA's prior information, up to 30,000,000 annual gallons of K001 wastewater (and "F024, -K001, -K028, K048, K086, K087, K101, K015, K018, K020, K024, K037, K044, K045, K047, K099, K010, K010, K027, K038, K029, K040, K043, P040, P043, P062, P074, P085, P104, P106, P111, U058, U235, K036, P039, P041, P094, P097" wastewater or a subset thereof) would be injected annually.

In the Third-Third proposal, EPA states it has no information that the following wastes, among others, are being injected: K100, P038, P065, P103, P119, P136, U204, P099, U145, and U205. 54 Fed. Reg. at 48,486. By these comments, CWM informs the Agency that once Port Arthur commences operation in the next month, it in fact will most likely be injecting these wastes as scrubber water blowdown, again at volumes up to 30,000,000 gallons annually per code.

We have carefully reviewed the expected gate receipts at the Port Arthur incinerator, based on the waste profiles that have been collected from prospective generators, to identify those restricted wastes the facility expects to receive which should initially be incinerated to remove organic constituents, but which also have an inorganic treatment standard for the wastewater treatability group. Then we compared the wastewater treatment standard to the data we have recently obtained on the background values for the blowdown water. This comparison shows the following.

Port Arthur's blowdown water will most likely fail the chromium treatment standard for these waste codes:

F024	K021	K004
K028	K022	K081
K048	K086	K028
K049	F008	F011
K050	F009	F012
K051	K084	U032
K052	F006	K100
K015	F019	P099

It will likely fail the lead treatment standard for these waste codes:

F024	K047	K087	F011
K028	K048	F008	F012
K101	K049	F009	K084
K102	K050	F006	D008
K001	K051	K061	K100
K022	K052	P110	U144
K044	K069	U051	U145
K045	K086	K028	F007

Docket Number: LD12-L0015 (continued)

Commenter: Chemical Waste Management, Inc. (CWM)

Comment: (continued)

It will likely fail the nickel treatment standard for these wastes:

F024	P074
K022	K028
K083	K115
F008	F011
F009	F012
K061	K083

It will likely fail the barium standard for D005.

Although the background concentrations for the blowdown water pass the treatment standards for the following waste codes, CWM believes it likely that the scrubber water blowdown will not pass once hazardous wastes containing appreciable quantities of inorganic constituents are incinerated:

K101	D004	P113	U204
K102	P038	P114	U205
K031	P113	D011	U214
P010	P114	P104	U215
P011	D009	P103	U216
P012	D006	P119	U217

Many of the above codes have incineration-based treatment standards for the non-wastewater form (e.g., K001, F024, K048-52, K115). The Port Arthur incinerator was designed to accept these wastes. Port Arthur expects to receive other codes above which have non-incineration based treatment standards (e.g. F006, F019, K061) mixtures, such as contaminated soil and debris. Incineration of these mixtures would be appropriate due to high concentrations of organic constituents or the presence of other waste codes which require incineration. Moreover, if the final Third-Third rule requires characteristic waste codes to co-exist with listed wastes, then more waste mixtures having both organic and inorganic treatment standards will arise. (For example, K048 exhibiting the characteristic of lead or chromium.)

In attempting to bring the Port Arthur incinerator on-line, CWM has attempted to address rapidly changing regulatory requirements. CWM also finally pursued what appeared to be the best avenue for long-term regulatory relief, i.e., the no-migration petition process, but has been frustrated by EPA's lack of action on its petition.

We do not believe that EPA intended the land disposal restrictions program to cripple the operation of new, commercial hazardous waste incinerators. Under the current scheme, however, this incinerator will be unable to accept about 80 restricted wastes because its blowdown water will not meet applicable treatment standards prior to deep well injection. Such a result serves neither CWM's nor EPA's best interests.

Docket Number: LD12-L0015 (continued)

Commenter: Chemical Waste Management, Inc. (CWM)

Comment: (continued)

To solve this dilemma, we suggest the following options:

(1) that a nationwide capacity variance be granted for incinerator scrubber water blowdown water containing any restricted wastes.

(2) a nationwide capacity variance is granted for incinerator blowdown water containing any of the waste codes identified above. The basis of the variance would be that EPA did not anticipate that 30,000,000 annual gallons of each of these wastes would be generated during its prior rulemaking. We realize that the variances for the waste codes would be staggered and run from either May 8, 1990, or the date EPA made a land ban determination for the specific waste code. 54 Fed. Reg. at 25,418 (June 14, 1989).

(3) EPA carves out a separate treatability subcategory for incinerator scrubber water blowdown resulting from the incineration of any of the above codes and establishes a treatment standard based on the performance of the Port Arthur facility.

(4) Region VI promptly grant CWM's pending no-migration petition, which has received a favorable recommendation from the Texas Water Commission.

12.15 EPA's Assumption That F025, U077, And U078 Wastewaters And Nonwastewaters Are Not Deepwell Injected Is Questionable

Summary:

Vulcan Materials Company (128) questioned EPA's assumption that F025, U077, and U078 wastewaters and nonwastewaters are not currently deepwell injected, thus banning these wastes from any future deepwell injection. Vulcan Materials felt that some manufacturers may be disposing of filter aids and spent desiccants (F025) by deepwell injection as well as ethylene dichloride (U077) and vinylidene chloride (U078).

Response:

EPA disagrees that F025, U077, and U078 wastewaters and nonwastewaters might currently be deepwell injected. EPA received no information from the TSDR Survey indicating that any of these wastes were currently injected. Furthermore, no data were received during the public comment period for this rulemaking to make EPA believe otherwise. Therefore, EPA does not believe that F025, U077, or U078 wastewaters and nonwastewaters have been deepwell injected, and is restricting any future deepwell injection of these wastes.

Comments:

The comment relevant to this issue is presented as follows:

- Vulcan Materials Company (128).

Docket Number: LD12-00128

Commenter: Vulcan Materials Company

Comment:

Proposed Effective Date Determinations for Wastes with Proposed Treatment Standards

The current proposal contains EPA's intention to restrict on May 8, 1990, the underground injection of all wastes with proposed treatment standards. This restriction would apply to those wastes not currently being deep well injected. Table III.B.2.(a) lists those wastes that are not currently being deep well injected. Included in this list is waste F025, which is light ends, filters and filter aids and spent desiccants from the manufacture of C₁-C₆ aliphatic halogenated hydrocarbons.

We question whether the inclusion of F025 is justified on the EPA's assumption that no F025 waste is being deep well injected. It is possible that some manufactures may dispose of filter aids and spent desiccants by means of deep well disposal and F025 should be removed from Table III.B.2.(a) until the Agency has verified its assumption. Likewise, it is uncertain that no U077 or U078, ethylene dichloride and vinylidene chloride respectively, are not being deep well injected by some manufacturer or industrial user of such aliphatic chlorinated solvents.

12.16 Proposed Standard For D002 Wastewaters Will Result In Poor Utilization Of Surface Disposal Capacity

Summary:

Ethyl Corporation (209) stated that the D002 requirement for removal of insoluble salts would result in poor utilization of surface disposal capacity and would pose a greater threat of contamination to drinking water than if it were deepwell injected.

Response:

EPA has discontinued the requirement for removal of insoluble salts for D002 in this rulemaking.

Comments:

The comment relevant to this issue is presented as follows:

- Ethyl Corporation (209).

12-95

Deepwell Injected Wastes

Docket Number: LD12-00209

Commenter: Ethyl Corporation

Comment:

Underground Injection of Corrosive Characteristic Wastes

UIC permit limits for pH should supercede the proposed treatment standard range of pH 6 to 9. In many circumstances, it is necessary to inject streams with a pH well below 6 in order to maintain optimum hydraulic transmittal of fluids through the disposal formation. Conversely, neutralization to insoluble salts of high pH streams prior to injection can cause pluggage of the disposal formation. Removal of these insoluble salts prior to injection will result in poor utilization of surface disposal capacity and this disposal would pose a greater threat of contamination to drinking water. Also, the extensive natural resources required to neutralize these voluminous streams will be prohibitive.

12.17 Clarification Of Table III.B.2(b)**Summary:**

Vulcan Materials Company (128) mentioned that Table III.B.2(b) is unclear and requested clarification.

Response:

Table III.B.2(b) indicates the deepwell injected volume of waste, by waste code, requiring alternative treatment capacity for this rulemaking. This table also breaks out these waste codes and associated volumes by the rulemaking in which they were scheduled (First Third, Second Third, and Third Third). First and Second Third scheduled wastes regulated in the Third Third are either "soft-hammer" wastes or wastes receiving revised treatment standards.

This table does not supply data on effective dates for these wastes. For deepwell injected wastes receiving a variance in this rulemaking (Table III.B.2(d)), the effective date is May 8, 1992. For all of the other deepwell injected wastes, the effective date is 90 days after promulgation of the Third Third rulemaking, or August 8, 1990. However, EPA believes that the Third Third final rule will critically affect the management of large volumes of waste disposed on-site in injection wells at a number of facilities. The injection wells at these facilities are directly connected to the plant production operations and, all totaled, handle at least five billion gallons of hazardous waste per year. In order to realistically meet the treatment requirements for the Third Third rule, the plant managers will need time to make considerable logistical adjustments such as repiping, retooling, and development of transportation networks at the plant operation facility.

EPA has relied on such logistic factors in prior rulemakings to determine when capacity is realistically available. EPA notes that these same logistic factors do not appear necessary to

warrant any extension for wastes sent to off-site commercial injection facilities as those for on-site injection facilities. Therefore, EPA is exercising its authority under section 3004(h) of RCRA, providing a six-month extension beyond the May 8, 1990 promulgation date for all Third Third waste disposed at on-site injection facilities. However, wastes subject to any extension of the effective dates must be in compliance with the California list prohibitions, if applicable.

Comments:

The comment relevant to this issue is presented as follows:

- Vulcan Materials Company (128).

Docket Number: LD12-00128

Commenter: Vulcan Materials Company

Comment:

Finally, regarding the issue of deep well injection and national capacity variances, the significance of Table III.B.2.(b) is not readily apparent. Is it the Agency's intention to continue any currently existing national capacity variances or is there another purpose for this table? The text suggests that EPA will grant a two-year national capacity variance for those substances for which there is inadequate deep well injection capacity but it is unclear as to how this determination is to be made and when the prohibition of the injection of Table III.B.2.(b) wastes will be totally implemented. Sections 148.14-16 indicate that many of the substances on this table are prohibited from deep well injection effective May 8, 1990.

12.18 Additional Deepwell Volume Data Submissions**Summary:**

Gibraltar Chemical Resources, Inc. (264) submitted deepwell injected volumes of P and U wastes as requested by EPA in the proposed rule. In addition, Great Lakes Chemical Corporation (L006) submitted data on the volume of contaminated groundwater it was deepwell injecting at its facility due to a site remediation project. Finally, the Chemical Manufacturers Association (CMA) (L007H) submitted an underground injection well survey.

Response:

EPA acknowledges these comments and has considered the Gibraltar Chemical Resources data in the capacity analysis. EPA has updated several waste code waste volumes from the CMA underground injection well survey and has also used this source to confirm much of its own information. The Great Lakes Chemical Corporation data was evaluated but was inadequate to include in the waste code analyses. It was unclear from the data whether this contamination was the result of contact with bromine P or U wastes, or from contact with leachate. EPA, therefore, has not included this volume in either the capacity analysis for P and U wastes or for multi-source leachate.

Comments:

The comments relevant to this issue are presented in the following order:

- Gibraltar Chemical Resources, Inc. (264);
- Great Lakes Chemical Corporation (L006); and
- Chemical Manufacturers Association (CMA) (L007H).

Docket Number: LD12-00264

Commenter: Gibraltar Chemical Resources, Inc.

Comment:

The Agency requests information concerning the volumes of Third-third wastes identified by P and U RCRA waste codes that are being injected. (54 FR 48472)

In calendar year 1989 Gibraltar injected the following Third third wastes:

<u>EPA waste code</u>	<u>Volume injected in gals.</u>
U079	7,700
U115	2,752
U134	770
U188	5,280
U228	3,138
U239	810

Docket Number: LD12-L0006

Commenter: Great Lakes Chemical Corporation

Comment:

Due to a remediation project at its El Dorado facility, groundwater contaminated with brominated constituents will have to be disposed of via deep well. The anticipated disposal capacity needed for this is in the range of 250MM to 500MM gallons per year.

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association (CMA)

Comment:

Hazardous Wastes Injected By All Wells

Waste Code	1981 Volume (gallons)	1982 Volume (gallons)	1983 Volume (gallons)	1984 Volume (gallons)
D001	154,000,000.	47,600,000.	86,800,000.	98,500,000.
D002	2,480,000,000.	2,070,000,000.	2,330,000,000.	2,380,000,000.
D003	388,000,000.	305,000,000.	220,000,000.	144,000,000.
D007	169,000,000.	158,000,000.	128,000,000.	7,900,000.
F002	25,300,000.	13,700,000.	11,400,000.	12,200,000.
F003	31,600,000.	27,000,000.	21,700,000.	22,600,000.
F004	68,700,000.	37,200,000.	30,900,000.	33,100,000.
F005	21,100,000.	3,660,000.	3,350,000.	0.
K009	69,100,000.	37,100,000.	38,500,000.	38,000,000.
K010	2,240,000.	1,880,000.	326,000.	1,950,000.
K011	590,000,000.	779,000,000.	801,000,000.	999,000,000.
K013	372,000,000.	369,000,000.	356,000,000.	384,000,000.
K014	1,580,000.	1,740,000.	2,380,000.	1,480,000.
K019	0.	0.	158,000.	57,900.
K025	68,700,000.	37,200,000.	30,900,000.	33,100,000.
K030	1,330,000.	537,000.	0.	0.
K033	7,000,000.	7,000,000.	41,900,000.	7,000,000.
K083	23,400,000.	12,800,000.	10,600,000.	10,500,000.
K104	117,500,000.	49,000,000.	40,750,000.	43,500,000.
P024	2,630,000.	2,630,000.	2,630,000.	4,660,000.
U001	7,900,000.	0.	0.	0.
U019	78,600,000.	66,200,000.	41,000,000.	0.
U041	58,500,000.	54,000,000.	72,800,000.	0.
U115	11,000,000.	16,000,000.	16,000,000.	14,000,000.
U122	1,050,000.	1,580,000.	946,000.	946,000.
U154	0.	11,100,000.	11,100,000.	20,800,000.
U188	19,500,000.	18,000,000.	24,200,000.	0.
U197	0.	0.	0.	12,300,000.
U211	3,830.	1,990.	1,390.	0.
Other	38,500,000.	11,600,000.	14,900,000.	2,140,000.
TOTAL	4,808,233,830.	4,138,528,990.	4,338,241,390.	4,271,733,900.